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MARCH-JUNE, 1945

Nos. 1 and 2

CHILD DEVELOPMENT



Editorial Board

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PUBLISHED QUARTERLY BY THE SOCIETY FOR RESEARCH IN CHILD DEVELOPMENT
NATIONAL RESEARCH COUNCIL

2101 CONSTITUTION AVENUE
WASHINGTON, D. C.

Made in United States of America



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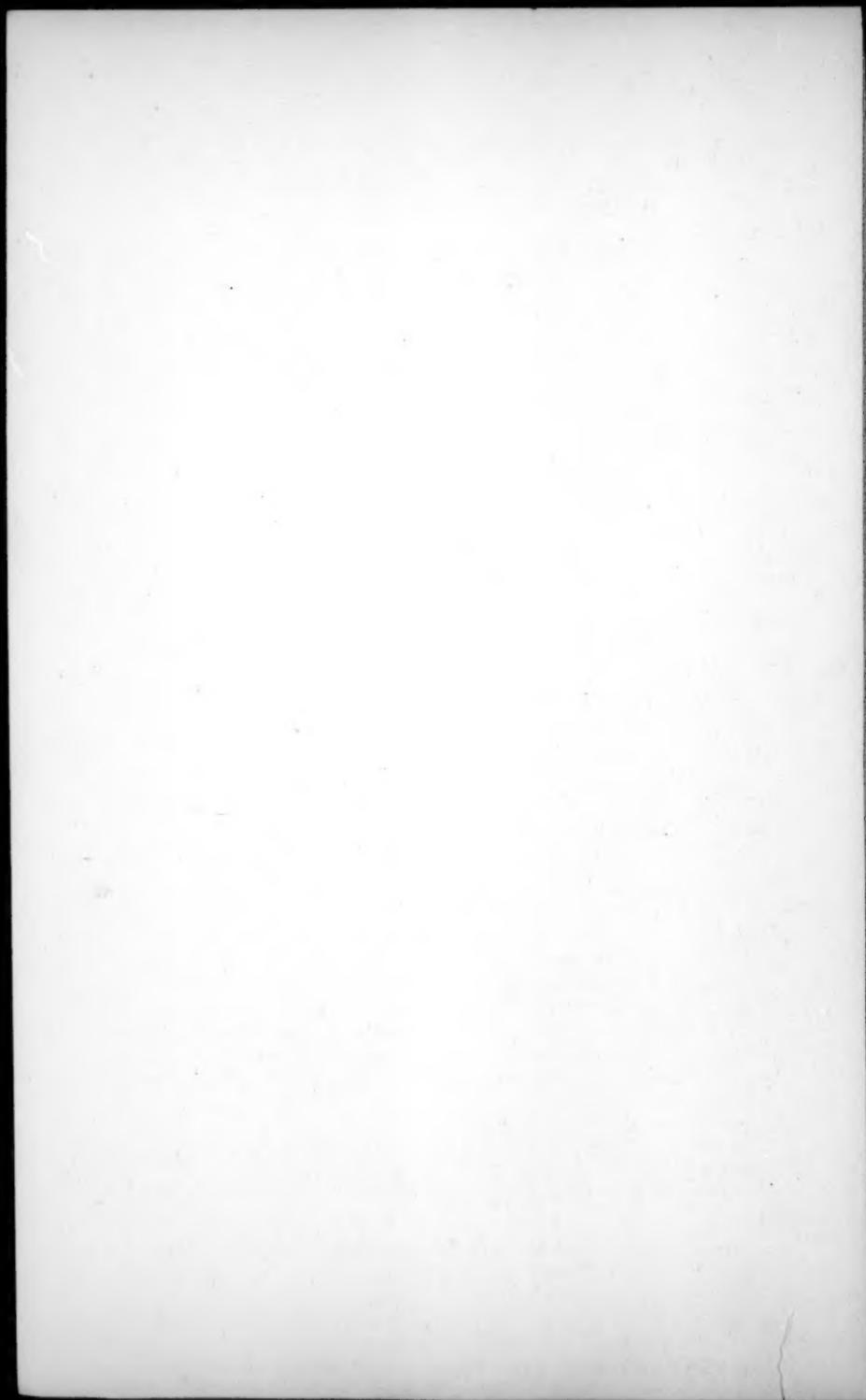
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A CROSS-CULTURAL APPROACH TO THE PROBLEM OF STUTTERING*

ADELAIDE KENDALL BULLEN

Fatigue Laboratory
Harvard University

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Introduction

The Problem in General

The problem as to the causes of stuttering is at present a controversial one. After perusal of the literature, Dr. Fillmore H. Sanford (29) writes:

... researchers are almost unanimous in insisting that linguistic disorders, especially stuttering, are closely related with broad aspects of personal adjustment. There is no unanimity, however, as to what the relation is. In connection with stuttering, there are those who insist that the malady is produced by some disorder of the personality, while others are equally sure that any concomitant personal maladjustment follows in the wake of stuttering. The whole literature pertaining to this disorder is contradictory and difficult.

My limited acquaintance with the literature would also bear out this point of view. Maslow and Mittelmann (19, p. 421) in their 1941 survey of *Abnormal Psychology* edited by Gardner Murphy say:

*Paper written at Radcliffe College before the author joined the staff of the Fatigue Laboratory.

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The psychodynamics of stuttering is, however, a moot question; hence only tentative interpretations can be made.

Hence, if we hope to solve the problem of stuttering via the existing literature, we are doomed to disappointment. Therefore in this paper I shall try to approach the problem from, we hope, a fresh point of view and, though building on invaluable work that has been done by men like James Sonnett Greene, M.D., Smiley Blanton, M.D., and others, carry the investigation beyond the boundaries of our own culture and see what lights a cross-cultural approach may throw upon our own clinical cases.

Method of Cross-Cultural Approach

By using the anthropological, sociological, and psychological approaches in examining data on stuttering in three areas with alien cultures and within our own culture, it has been our continual aim to gain a new perspective on the problem. The most detailed and valid comparative material has been obtained through field work and study of the Navaho. My own limited field work in the area has been supplemented by Dr. Clyde Kluckhohn's extensive work as well as a wide literature on the Navaho (13). Data as to New Guinea tribes have been obtained through Dr. Margaret Mead's writings (21,22,23) and personal communications from her and Dr. Reo Fortune. We also have word from Dr. Lloyd C. Warner and Dr. Joseph B. Birdsell as to their impressions of the incidence of stuttering among non-literate societies in Australia. Dr. W. Elmer Ekblaw kindly told the writer unpublished data as to certain aspects of the life of the Polar Eskimo in Greenland.

In comparing these findings with the problem as we see it within our own culture we have tried to introduce some specific data to add to the general impression of the problem as gained from the existing literature. To do this we have examined data on 16 cases of stutterers in a boys' boarding school with three control groups of 10 cases each. This material has been approached from the medical, psychological, sociological, and both physical and social anthropological points of view.

It is fully realized that the small number of cases makes none of these findings statistically significant. However, it is hoped that possible trends may be derived from a preliminary study of this nature which may indicate that further work with sufficient numbers of cases may be worth undertaking and prove fruitful in confirming or denying by statistical means conceptual

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schemes which may be derived from the present introductory study.

Also it is hoped that more cross-cultural data will be collected as workers in the field come to realize the concrete value in defining problems which comes from the larger view obtained by regarding our problems in the light of the experience of cultures other than our own and thus helping to avoid cultural myopia in analyzing our own difficulties.

Data from Non-Literate Societies

Data from the Navaho

Kluckhohn's extensive work with the Navaho at Ramah, New Mexico, yields an accurate ratio of the incidence of stuttering in that group (14). He finds three cases in a group of 492 Navahos. He writes:

No cleft palate or other speech defects. For the Reservation I have no equally precise figures but my impression would be that the relative incidence is at any rate no greater than this.

It is of interest to compare this incidence with that of the United States as a whole (24):

More than 13,000,000 people, or ten percent of the population of the United States, have some sort of speech defect or voice abnormality, according to the survey made in 1930 by a Committee of the White House Conference on Child Welfare and Protection. Unofficial reports since 1930 state that speech defects are increasing and that at the present time, at least one percent of our entire population suffers from stuttering speech alone!

From my own field work with the Navahos in the region of Chaco Canyon to Blanco Canyon, New Mexico, I should agree with Kluckhohn as to the comparative rarity of stuttering. In four weeks, I knew of one case at Chaco and heard of another near Carson's Store. I asked each family whom we visited if they had any friends or relatives who stuttered and all replies were in the negative except for the one instance in regard to the latter case cited above.

Dr. Leland C. Wyman, who has done field work among the Navahos for ten years in the regions of Mariana Lake, Pinedale,

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Coolidge, Smith Lake, and at Chaco Canyon, reports that he has never met a child or adult who stuttered.

Flora L. Bailey, who has done field work in the Chaco and Ramah areas, says that she has never known anyone who stuttered so that it was noticeable although several cases have been reported to her.

Clifford Molholm, M.D., of the Crown Point Hospital and formerly at the hospital at Fort Defiance, said I might quote him as saying that he had never seen a Navaho who had real speech difficulty, that is, inability to speak or the presence of facial spasms when trying to make words.

Both Miss Bailey and Dr. Molholm, however, noted a rather general occurrence which is of interest in the cultural definition of "stuttering." Many Navahos although fluent speakers sometimes repeat the initial syllable of a word. Dr. Molholm said he asked the interpreter at the hospital why the people did this as they did not seem emotionally upset and there seemed no apparent cause for stumbling speech. The interpreter replied that "they are hunting for the proper word in expressing their mind. It means that they are looking for a word to express what they want to say next."

This explanation ties in with the morphological study of the Navaho language as the initial pronoun of a verb or noun phrase or a negative prefix, "do," is incorporated into the word itself, becoming the initial syllable of the word. Examples are the initial syllable "bi" as in "bidáhniyáhádi" - the one that he had met - or the initial syllable "do" as in "dóyént'í" - they didn't say anything about him. Sometimes there are as many as nine meaningful parts of one word. As these parts all follow the initial pronoun syllable or negative prefix, it is very conceivable that "they are hunting for the proper word in expressing their mind." This explanation would liken the repetition to our "er-er" when searching for a particular word.

The Navaho habit would correspond to Sanford's valuable concept of a "normal roughness" which he feels is especially apt to come at a "choice point" (28, p. 188). The Navahos' occasional repetition of the initial syllable of some words seems to be a speech habit which causes them no inconvenience or embarrassment. It certainly does not appear to be a nervous manifestation and if it comes under any speech defect heading rather than a "normal roughness," it would be classed as stammering, not stuttering. Stuttering is a break in the rhythm of speech (3) and should not be confused with stammering which depends on defects of articulation. Stammering depends on performance, stuttering depends on emotional disturbances (10).

In collecting cross-cultural data on stuttering, therefore,

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it is of extreme importance for the validity of the count to allow for whatever "normal roughnesses" appear in the particular speech of a particular people. Otherwise, overeager investigators might bring back staggering instances of the incidence of stuttering in a culture with almost everyone classed as a stutterer. This must be carefully guarded against in future field work; otherwise the situation will be grossly misrepresented.

Also of interest and extreme importance is the "interaction pattern" of a cultural group, their use of speech and the place it holds in the life of the group. Accurate measurements with the use of a modified Chapple technique of measuring interaction rates would be of great interest. With the Navaho I noted the lack of pressure, the lack of a feeling of immediacy, the lack of staring at the speaker, time for complete orientation and ease, speaking only when one really wishes to, the total lack of the necessity of "keeping up the conversation." As Edler (7, p. 26) writes:

... Time is an element of which he has little conception. Seldom does he hurry. His trading methods distract the average white man, for it takes him forever to come to the point and consummate a trade. If a Navajo visits you, he might sit for many minutes without stating the purpose of his visit, for, in his opinion, it would be impolite to discuss business matters immediately. Such a tempo of living is difficult for us to understand, but it has its merits of ease, tranquillity, and peace of mind.

As an indicator of the relative importance of speech in the adjustment of the Navaho child, it is of interest to note the splendid adjustment of a 12-year-old deaf and dumb Navaho girl whom I saw several times during my field work. She was in a much more favorable position than she would be in our culture. She was a likable child and showed no atrophy of personality development due to her handicap. She was treated fondly, though not patronizingly, by her relatives and playmates. Her mother had her dressed just as attractively as the sister who could speak. Her hair was parted in the middle and held back on each side like her sister's. The hair bows I gave them were put with equal care on each sister. They both herded sheep. The deaf and dumb girl had helped her sister and two boys to make a collection of adobe toys for me. They also showed me with pride the tiny model of a cradle board with a baby doll in it. Our interpreter conveyed their conversation to me with reflected pleasure in his voice, "The girl twelve did

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baby!'

Evidently the deaf and dumb girl was being taught to sew. She would also be taught to weave and do housework and so fulfil the responsibilities of her adult role. When I asked the interpreter if he thought she would marry, he said, "Yes, she marry," with an expression of certainty, apparently surprised that I should ask the question.¹

While field work gives invaluable data both as to interaction patterns and importance of speech within the culture itself, we have also been interested to learn of the incidence of stuttering among Navaho children when they are in the white schools. On the suggestion of Ruth Underhill, Associate Supervisor of Indian Education, I wrote Mr. George Boyce, Superintendent of Schools, Navaho Jurisdiction, Window Rock, Arizona. Neither Dr. Underhill nor Mr. Boyce could provide any statistical data on the incidence of stuttering among the children, as no survey has been made, but Mr. Boyce kindly had inquiries made from teachers who had taught Navaho children in the schools for many years. However, no cases were brought to light.

Helen Bradley of the U. S. Indian School at Albuquerque, New Mexico, has kindly investigated the problem of stuttering among Navahos and other Indians who attend schools in this area. All the teachers she first talked to gave negative replies as:

No stuttering but plenty of other language difficulties. Most noticeable is a drop in volume at the end of every sentence or clause. This is common all over the Southwest and very difficult to break. (Boarding school teacher 7th to 12th grades.)

Noticed no stammering or stuttering. The children wouldn't let themselves be that much bothered. When

¹*This child had just begun to talk when prolonged ear trouble began. She was in white hospitals for two years for treatment of the ears and when she returned home she could not talk or hear. Apparently, this case is due to impaired hearing and not similar to the Henrys' work with the two Pilaga Indian children whom the natives considered deaf and dumb. However, after the Henrys established excellent rapport with the children, they talked to the Henrys although they would become mute when natives came near. Both children were orphans and orphans were very looked down on in the Pilaga culture. Evidently these cases did not have the history of ear trouble but apparently their mutism was emotionally conditioned due to maladjustment (11).*

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they got tired, they just quit trying. (Miss Howard - worked with Zia, Zuni, and Shiprock children.)

However, Miss Bradley finally did discover three Navaho children who stuttered. Of these, one is in an acute culture conflict home situation, according to Dr. Kluckhohn. (Culture conflict was also present in the case at Chaco.) Also, one Keres speaking child stuttered. She had difficulty in saying the teacher's name to Miss Bradley. On inquiry, she admitted she was afraid of the teacher.

Of the three Navaho stutterers, Miss Bradley judged two to be "cerebrotonic" in type, whereas one had a "stocky" build. Of one of the "cerebrotonics" she writes:

Intelligent, warmer, quicker than average. Well poised.

A letter to Dr. J. Roswell Gallagher from Otis J. Morgans, Principal of the U. S. Indian Vocational School, Phoenix, Arizona, contains the following data:

Mrs. Sadie Vigil, Indian matron at the Phoenix Indian School, with approximately 30 years of Indian Service experience to her credit, states that she can remember only one Indian person who stutters. He is Harrison Yazhe, full-blood Navajo young man about 21 years of age. He is an arrested tuberculosis case. He stutters when he gets unduly excited or under pressure. At present, he is at our school on a working scholarship basis. He attends Phoenix Junior College and is classified as a sophomore. (Communication, 1942.)

Data from New Guinea and Australia

New Guinea

After careful study of Mead's accounts of child rearing and social pressures among the Arapesh, Mundugumor, Manus, and Tchambuli peoples of New Guinea, it was of distinct interest to see whether the benign Arapesh, the hostile Mundugumor, the Manus, or Tchambuli would show evidence of social strain via stuttering speech. (Mead sources as cited above.)

Mead writes:

I have never seen stuttering among any of the primitive people whom I have studied. (Mead, Personal Communication, 1943.)

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Mead in another letter says:

I have never seen a case of stuttering or stammering among primitive people although I remember hearing of one among the Arapesh.

It might interest you to know that the courtesy language in Bali contains formal reduplicative elements that are handled like self deprecatory stuttering so that the ordinary polite word is tiang, the super-polite word is titiang. (Mead, Letter to Kluckhohn, December, 1942.)

It is of interest that the "mild" Arapesh report the only case that has even been heard of. This would suggest that while the Arapesh are kind and calm, the fact that the mothers have to leave their babies to work the crops may create a feeling of rejection with consequent insecurity for the young children. However, other factors in the culture itself may be the adverse determinants. Causal factors are usually due to an interplay of various aspects of the culture. It would require further research with this problem in mind to determine why the Arapesh "produce" a stutterer and the other tribes, as far as we know, do not.

Mead's mention of the Bali self-deprecatory stuttering is of interest. Probably the Keres child who stands in awe of the teacher would appreciate what attitude of super-polite respect this is supposed to connote!

Dr. Leo Fortune worked on linguistics with the New Guinea tribes. It is of interest to have his observations as to the incidence of stuttering among these same peoples. He writes:

I am afraid that I have to give you a negative report on the problem of stuttering. I did not meet anyone in the Mundugumor, Arapesh, Tchambuli and Manus tribes who stuttered. Nor in the Dobuan, or New Hanover or Tabor or Kamamentira river tribes. At a rough estimate I must have talked with about three thousand persons in all in the former four tribes, and with about three thousand others in the latter four. I met a few cases each of epilepsy, haemophilia, running amok, leprosy and insanity, but absolutely none of stuttering.

The pressure and the pace of the history of the Kamamentira river tribe was faster than our own, as they are at war half their time, and about half of them of both sexes die in annually recurrent war. They live in an area not controlled yet by the Australian Govern-

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ment. The pace of the history of the Mundugumor, Arapesh, Tchambuli and Manus, as they were studied, was slower, as they live in areas under Government control.

As I have not met a primitive who stuttered I shall be interested if you get a report of one who did.

(Fortune, Personal Communication, 1942.)

Mead's and Fortune's observations are of great interest as they seem to carry our Navaho hypothesis further afield. Whereas Navahos in culture conflict situations seem a possible prey to stuttering, and stuttering is not unknown among the Navaho themselves as is evidenced by the few cases we have discovered and the fact that there is a Navaho word meaning "Stutterer" used as a nickname (Kluckhohn), stuttering seems even rarer among the New Guinea tribes at the time Mead and Fortune visited them. It would be of interest to get recent data as "civilization" has invaded their part of the world!

Australia

Word from Australia comes from Dr. Lloyd C. Warner and Dr. Joseph B. Birdsell who have both done extensive work with non-literate societies there. Warner writes:

There were no cases of stuttering observed by me in any of the tribes I studied in Australia.

Birdsell says in regard to the incidence of stuttering among the Australian natives:

We made no systematic observations upon this trait and quite frankly, I can only rely upon an obviously faulty memory on this point. I have the impression, however, that stuttering was very rare among both the native and hybrid peoples. However, in the back of my mind, I recall a few teachers in the native schools commenting upon the fact that a few of the children seemed to stutter in consequence of having to learn a foreign language, i.e. English. This should not be taken as a statement of fact but merely as impressionistic material.

Of course, Birdsell is correct in bringing to attention the fact that where a particular item of behavior is being studied, systematic observations are invaluable. It was this sort of

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approach that first attracted our attention to the situation among the Navaho. However, what later work has been done has not reversed our original impressions. Likewise the fact that all the above quoted observers, although consulted without knowledge of the opinions of the others, seem to concur on the rarity of the incidence of stuttering among these non-literate societies is reassuring.

Also it is of interest to note that Birdsell refers to the bilingual and probably to some extent culture conflict situation in which he believes stuttering to have occurred. One worker with Indians in California has drawn attention to the influence of the bilingual situation in "producing stammerers." The bilingual speaker has an added number of "choice points" and this is certainly an adverse factor. However, it is to be carefully considered whether in these instances certain coincidental culture conflict pressures are not also a part of the total picture which leads to stuttering speech, as well as a different interaction pattern, use, and importance of speech in the "civilized" culture.

Data from the Polar Eskimo, Greenland

Dr. W. Elmer Ekblaw lived with about 250 Polar Eskimos in Northwest Greenland for four years. He knew every person well and had talked and visited with them all. He is sure that there was not one who stuttered.

There was one congenital deaf and dumb case. The boy used his own sign language and could get along all right with his own people as they knew what he meant by his signs.

Dr. Ekblaw says the people were sociable but there was no premium on being a good talker.

He noted numerous instances of arctic hysteria. Sex was not a problem, due to the mores. Also, there was lack of materialistic motivation.

The range of calm and more nervous individuals seemed about the same as in our own society, he said. As a group they were not especially calm and stolid and exhibited a range of degrees of stability and evidences of nervous constitutions.

Everyone loved children.

General Data from Our Own Society

As we view the general incidence of stuttering in our own society, it is of interest to call to mind how our situation may differ from that in other cultures. While some child psychologists seem to treat the typical American child as the "norm"

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for all childhood, it must be borne in mind that the peculiar difficulties of the American child and the American parent may be inherent only to a certain degree in either the child or the parent and that the "peculiar" American environment and culture must also be taken into account.

When Dr. James Sonnett Green (9), of the National Hospital for Speech Disorders, writes:

The adult stutterer usually gives a history of having been a nervous, fearful child, an unduly irritable, excitable child, often living in a psychoneurotic parental atmosphere surcharged with nervous tension. Such is the fertile soil of the agar-agar in which the stutter-type is cultured,

we agree with him, but our anthropological and sociological leanings make us want to press the inquiry and probe a few of the possible reasons why one home in every hundred in our culture produces "a psychoneurotic parental atmosphere surcharged with nervous tension." This is not the case with the Navaho!

As well as the comparatively high rate of incidence of stuttering in the United States, it is of interest to note that

... a study of nearly 30,000 cases treated at the National Hospital for Speech Disorders demonstrates that eight times more men than women are afflicted with stuttering (25).

Dr. Cyril Burt, (4, p. 398) found in England a preponderance of boys who stuttered as compared with girls.

One Set of Case Data Analysed in Some Detail

If one person in every hundred, and eight times as many men as women stutter in our culture, we now face the question - why? Before discussing conceptual schemes as to these problems, it is of interest to examine some specific case data on 16 stutterers in a boys' boarding school.

This work is entirely exploratory in nature and if, from this preliminary investigation, some clues are gleaned as to which tests and measurements yield results that are significant for this particular problem, it will have been worth undertaking. Also, if certain significant gaps appear, future work may be done along these lines.

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QUESTIONNAIRE 1

NAME:

AGE:

(Mentality)

Scholastic Achievement
Average Each Year
Academic Interest

(Ed. Training Sup.)

Reaction to school and its discipline, rule infractions,
cooperation with authorities

(Physical) Health - Size Build Endocrine Eyes Ears
Defects Hay Fever - asthma - eczema
Illnesses (serious or chronic)

Nervous System: nailbiting enuresis nightmares
insomnia restlessness
temper tantrums

(Personality)

Anxiety - (studies, sleeping, eating, social health)
Incentive - ambition (college, career)
Interests - (athl., mech., exec., art., academic)

Confident Alert Even Drive
Relaxed Bland Friendly
Virile Stable Cooperation

(Insight)

Judgment - (Self appraisal, maturity of opinion and decision
regarding himself and his work)

(Social)

Popularity with mates with adults
Friendships
Social initiative

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Questionnaire 1

(Cultural)

Economic income Father's job travel
Cultural - parents' interests

FAMILY:

(Heredity)

F.	Ed.	Job	Interests
M.	Ed.	Job	Interests
Siblings			

(Family influences)

Long illness in family
Placid or active household
Home tense or harmonious
Father, mother dominant
F-M relationship
Divorce
F-Sibling relationship (cranky, bad tempered, indulgent, friendly)
M-Sibling relationship (indulgent, friendly)
Relationship with siblings (resentful, rivalry)
Disciplinary troubles
F or M nervous (speech, jittery, tics)

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Method for Present Study (Dr. Gallagher)

- (1) Data obtained on all stutterers in group of 725 boarding school boys - no selection.
- (2) For controls 10 boys selected at random from three sections of an unselected research group of 353 boys. The 353 were chosen without selection - all members of three successive Junior classes were included; these were studied and subsequently given a personality rating of A (very well adjusted), B (average adjustment), and C (poor adjustment). Ten boys were chosen at random from each of these three groups so that the stutter group could be compared with each. Certain other data such as anthropometric have been used; in some cases these data are based on all the members of some age group within the 353 boys and without reference to personality rating.

Only three of the stutter group were members of the 353 research group.

Dr. Gallagher examined all the subjects and obtained information as to the criteria listed on Questionnaire 1 (pp. 12-13). He gave comparative ratings on these factors as recorded in Chart 24 (pp. 82-83). He also asked the stutterers the questions listed in Questionnaire 2 (p. 52) as recorded in Chart 25 (p. 84). The 30 controls have been intensively studied over a long period of time and the cases of stutterers have gone through all the routine examinations at the school as well as the special interview as to the speech problem.

Edwin M. Cole, M.D., Director of the Language Clinic, Massachusetts General Hospital, ran the laterality tests, and Dr. Carl C. Seltzer has done the anthropometric measurements. Dr. Sheldon estimated the somatotypes for the controls and Dr. Stevens arranged for the somatotyping of the stutterers to be done by a person on his staff with extensive training in somatotyping and past experience of estimating over 2000 somatotypes.

In examining the case histories, as the numbers are too small for statistical treatment, the comparisons will be tabulated for percentages of incidence with histograms for distributions of possible significance. The data have been assembled with the Rogers' Component-Factor analysis method (26) in mind. However, due to the fact that the boys are away from home, much important data as to family situations and heredity are not available. Also, more analytical and insightful data would be of interest from the actual day-to-day school situation with

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pressures, conflicts, etc., interpreted in the light of their effect on the individual. These lacks could be remedied by further investigation.

Due to the gaps in the present data, it is felt that an overall weighting of the diverse factors involved in each individual case is premature. However, just this sort of check and balance system as to the relative positive and negative effects from the different areas of the case history must be held up as an ideal goal to work towards. Until we can put our finger on the exact sore spots in each case history, therapeutic work will be undertaken in an astigmatic, if not blind, fashion.

Which factors are assets and which are liabilities for a given individual? We list our eight categories as Rogers has done in his Component-Factor Analysis (except that in our case Heredity and Physical are combined as we do not have access to sufficient data as to Heredity at the present time):

- (1) Mentality
- (2) Education-Training
- (3) and (4) Physical (Heredity inferred)
- (5) Social
- (6) Economic-Cultural
- (7) Self-Insight
- (8) Family

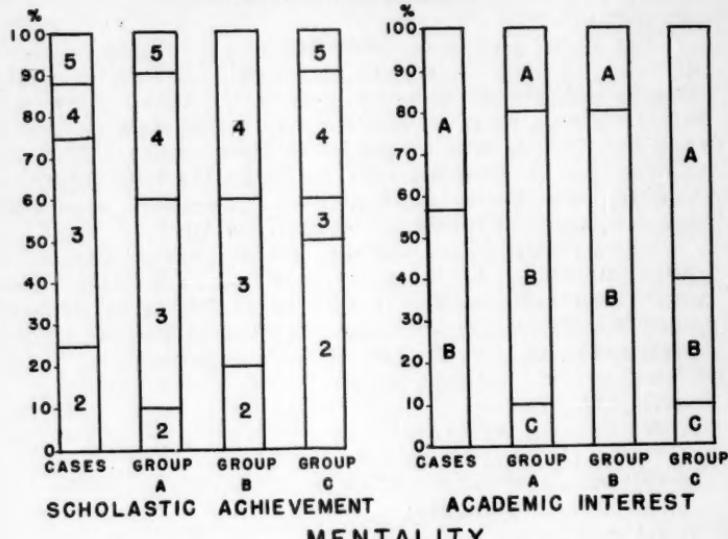
Chart 24 includes the full notation of data and the histograms which follow present each category to show the relative percentage incidence present in the four groups studied. Where the incidence has been 100 per cent negative for all groups studied, no histogram has been made. This includes the following items: Ears, all A, Normal; Enuresis, all N, No; Temper Tantrums, all N, No; Illness in Family, all N, No. Also not represented by a histogram are two items where only one instance has been encountered: Endocrine, all A, none, but one B rating, borderline, for the stutterers; Defects, all N but one Y, yes, in the B group. The presence of one borderline endocrine case among the stutterers is of interest. Otherwise the above findings seem to provide only negative evidence.

In interpreting the percentages represented in the histograms, anyone curious as to the exact number of instances can check this by reference to Chart 24. In this connection, the fact cannot be overemphasized that larger samples should be secured and that the present study has been undertaken to determine which measures and lines of approach may prove most fruitful in future work with samples of a thousand or more.

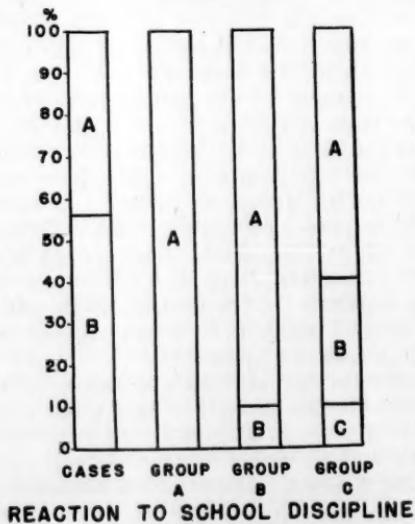
Data which present 1) the rating system, 2) findings, and

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CHARTS 1 AND 2



MENTALITY



REACTION TO SCHOOL DISCIPLINE

EDUCATION-TRAINING

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3) some possible inferences, are given in connection with the charts.

Mentality

Scholastic Achievement

1. Rating: If usually fails 3 or more: very poor	1
If usually fails 1 or 2: poor	2
No failures, average below 70: fair	3
70-80: good	4
80 or more: excellent	5

(Usually 2 out of 3 times a year)

2. Findings: The cases have a slightly higher percentage with the 5 rating than any of the other groups. No 5's are present in Group B. However, the percentage of 4's for the stutterers is much lower than for any of the other three groups. Therefore the total incidence of 4's and 5's combined is definitely lower for the stutter group than for the three control groups.

It is interesting to note that the incidence of 4's and 5's for Group C is identical with Group A, but there is a diametrically opposed distribution of 2 and 3 ratings. The A group is comprised of 40 per cent 3's and 10 per cent 2's while the C group has 10 per cent 3's and 40 per cent 2's. The percentage of 2 ratings for the stutterers is greater than Group B but decidedly less than Group C.

3. Some Possible Inferences: Although the excellent "5" student who stutters has an equal or slightly better chance of excelling than the control students according to these percentages, the potential "4" student among the stutter group is more apt to receive a 3 rating. In the C group, however, the percentage of 3's and 2's might suggest that among possible potential "3" scholars, poor adjustment tends to produce a majority of 2 ratings.

By placing the stutter column between that for Group B and Group C, it is significant to note the stepped increase of 2 ratings from well adjusted Group A to the B group, stutterers, and finally the poorly adjusted group. It would seem to suggest that there is a correlation between poor scholastic achievement and poor adjustment. It might be significant to compare the I.Q.'s of these four groups and thus be able to make a more valid interpretation of how much stuttering or poor adjustment actually lowers the scholastic achievement in comparison to measured intellectual potentialities.

CHILD DEVELOPMENT

Academic Interest

1. Rating: "How do you really like studies"; "are there any studies you especially enjoy"; "do you dislike going to school" - on basis of these, grade interest as "A" - "B" - "C".

2. Findings: The stutter group and Group C have an overwhelmingly higher incidence of A ratings than Group A or Group B. Groups A and C are the only groups to show an incidence of C ratings.

3. Some Possible Inferences: The stutterers and poorly adjusted boys show a higher degree of academic interest. This will be discussed further in connection with certain aspects of the importance of athletics as it relates to the successful adjustment of the boarding school boy. It is extremely important to consider whether the stutterers and Group C are really more intellectually inclined than Groups A and B, less athletic, and more eager to achieve scholastic recognition and success or whether because they cannot achieve athletic prowess and recognition with ensuing popularity, they take a compensatory interest in academic pursuits. It may also be asked whether lack of security and sensitivity to the teacher's approval make them put more effort and attention on their studies than the competent and confident athletic boy in Group A or B.

It must be noted that in spite of heightened Academic Interest the stutterers as a group have less combined 4 and 5 Scholastic Achievement ratings than the A group.

Education-Training

Reaction to School Discipline

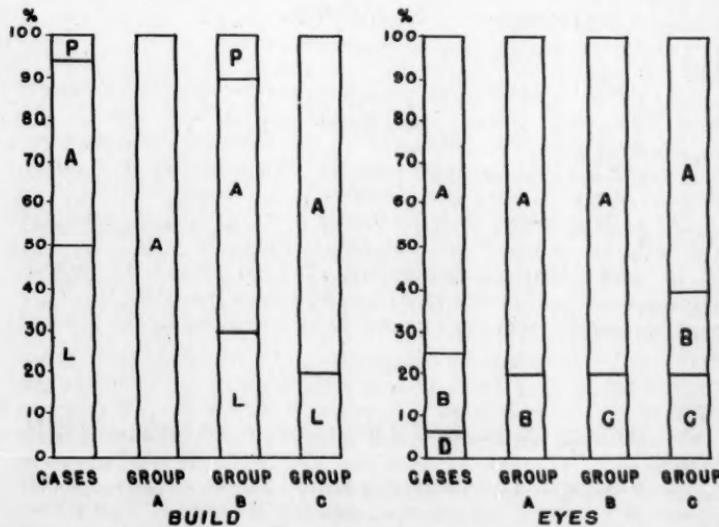
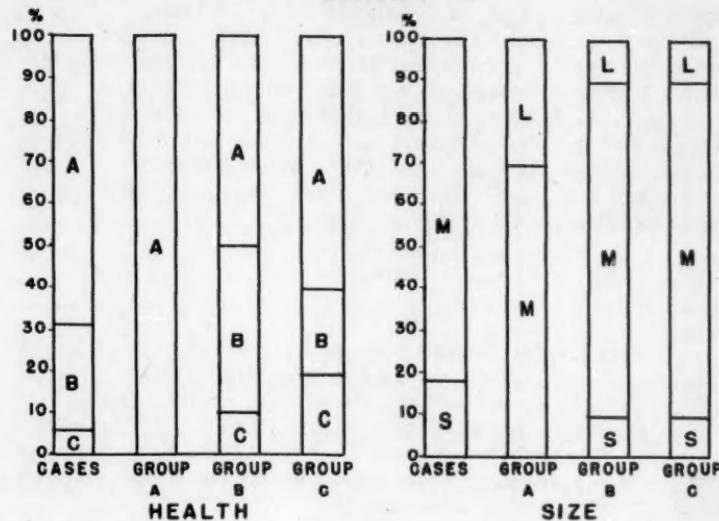
1. Rating: Mostly, has he had any disciplinary difficulties at school. Rate "A" - "B" - "C".

2. Findings: The stutter group receive the highest percentage of B ratings of any of the groups. There are no B's in Group A, only 10 per cent in Group B, 30 per cent in Group C, and over 55 per cent for the stutterers. Group C is the only group to receive any C ratings.

3. Some Possible Inferences: It is strikingly apparent from the histogram that the stutterers and boys of Group C are the ones who have presented disciplinary difficulties. It must be noted that this occurs in spite of their apparently high degree of academic interest. This looks like an adjustment problem in which the presumably "authoritarian" aspects of the school setup are a part of the picture. Some considerations of possible factors in this problem will be dealt with in a later section of this paper.

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CHART 3



PHYSICAL

CHILD DEVELOPMENT

The fact that the stutter group receive the lowest percentage of A ratings of any of the groups would also tend to suggest that there is more trouble encountered in reaction to school discipline by stutterers than among the other groups. However, Group C closely resembles the cases in this respect, showing only about 15 per cent higher incidence of the A rating. Group A with 100 per cent A rating and Group B with 90 per cent A rating indicate that school discipline as such does not create a problem for them. In other words, their all-around good adjustment makes them able to "take it."

Physical

Health

1. Rating: Has he had serious illnesses; has he had very frequent minor illness; has he lost much time frequently from school; does he appear robust. Rate: "A" - "B" - "C".

2. Findings: The percentage of A ratings for the stutterers is higher than either the B or C group. Also, there are less C's for the cases than in the B or C group. However, the best adjusted boys all have A ratings.

3. Some Possible Inferences: The health of the stutterers is better than either the B or C group but not as good as the health of the best adjusted boys, Group A.

Size

1. Rating: On basis of his appearance in relation to others of his age group, is he large, medium, small.

2. Findings: The cases are all medium and small as compared with the best adjusted boys who are all medium or large. Groups B and C have approximately the same percentage of medium sized boys but each group contains 10 per cent large and only half as many small as among the stutterers.

3. Some Possible Inferences: The advantage of size in helping to make a good adjustment to a boys' boarding school in our contemporary culture seems to be borne out by the present data.

Build

1. Rating: On basis of appearance is he leptic, athletic, pyknic.

2. Findings: The stutterers are 50 per cent leptic, whereas the A group is all athletic, and the B group is 80 per cent athletic and 30 per cent leptic. The C group is 80 per cent athletic and 20 per cent leptic.

3. Some Possible Inferences: The question of build will be

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discussed further in relation to somatotyping and use of certain anthropometric measurements. However, at this fairly impressionistic level, there are several interesting trends. It is interesting to consider that if the leptic came at about 40 per cent in the C group, this would give us a graduated level of correlation between occurrence of leptic build and maladjustment from the B to C to stutter group. However, the occurrence of 80 per cent athletic in the C group tends to suggest the importance of variables other than body build in determining poor adjustment. Nevertheless, other things being equal, it is advantageous to have an athletic build in a boys' boarding school as evidenced by the fact that all the best adjusted boys are athletic.

Evidently even at this tentative level we must look for a situation in which a balance or interplay of a number of determinants produces the end result of adjustment or maladjustment.

Eyes

1. Rating: Rate A - normal, B - better than 20/100 either, C - 20/100, D - 20/200 or worse.

2. Findings: Group C has twice as many instances of defective eyesight as Group A or B. The stutter group is only 6 1/4 per cent higher than A and B and much less than Group C. Stutter group has only D rating.

3. Some Possible Inferences: While there is higher correlation of defective eyesight with the poorly adjusted groups, cases and Group C, among the stutter group the D rating accounts for all over the "normal" distribution in the A and B groups. This may suggest that defective eyesight may not play any great role as a determinant of stuttering unless it is very severe.

It is to be noted that there is no incidence of eyesight with a D rating in any of the control groups. Therefore it is conceivable that very poor eyesight may be conducive to a certain amount of diffidence and lack of assurance which is a common personality component of the stutter syndrome.

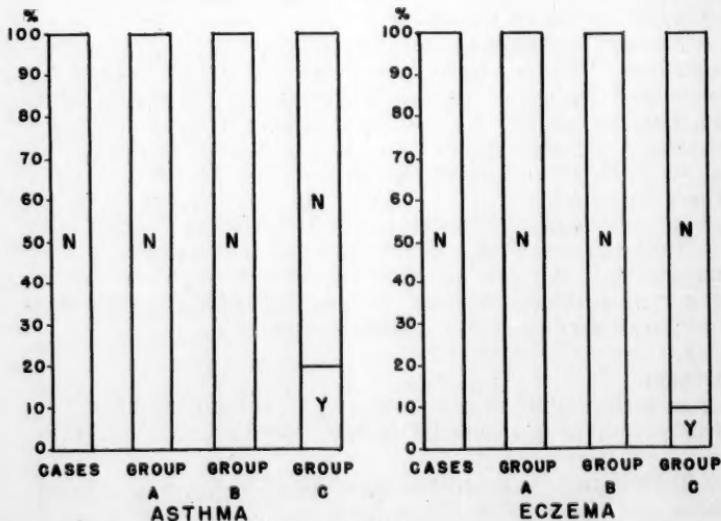
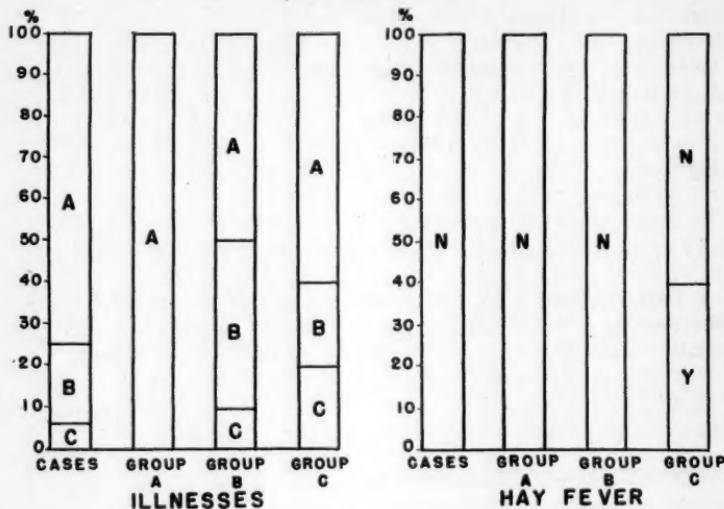
Illnesses

1. Rating: Rate A - seldom ill, no chronic ailment; B - frequent mild or occasionally severe illness; C - very frequently ill; recurrent severe.

2. Findings: It is interesting to note that the stutter group shows less illness than either the B or C group and that the B group exceeds the C group in total illness although with fewer recurrent severe illnesses (C rating). The A group is all A

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CHART 4



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rating.

3. Some Possible Inferences: In considering the high total incidence of illness for the B group but larger C ratings in the C group, it is easy to suppose that frequent mild illnesses or occasional severe illnesses (B rating) would predispose to less maladjustment than frequently recurring severe illnesses (C rating).

Hay Fever

1. Rating: No - N, Yes - Y.
2. Findings: Hay Fever occurs only in Group C. It shows a 40 per cent incidence.

3. Some Possible Inferences: As Hay Fever occurs only in the boys who are poorly adjusted, it raises the question as to whether there is a psychosomatic factor involved in susceptibility to hay fever.

Asthma

1. Rating: No - N, Yes - Y.
2. Findings: Asthma occurs only in Group C.
3. Some Possible Inferences: This incidence suggests psychosomatic implications.

Eczema

1. Rating: No - N, Yes - Y.
2. Findings: Eczema occurs only in the C group.
3. Some Possible Inferences: Whether we are justified in insinuating a possible psychosomatic factor in the occurrence of eczema is doubtful from the presence of only one case. Nevertheless, eczema does not occur in any of the other groups.

(It may be well to list again the Physical items measured which gave slight or negative results:)

Endocrine

1. Rating: Rate A - none, B - borderline, C - definite.
2. Findings: One case of B rating for the stutterers.
3. Some Possible Inferences: Here again one case is insufficient to be of great significance but no borderline cases appear in any of the other groups so it may well be worth recording for a larger number of cases. The hyperactive and overreactive behavior of some stutterers as well as the presence of conflict, anxiety, tension, with symptoms of an overstimulated sympathetic nervous system, make the correlation with hyperthyroidism not unlikely. However, this is an open question for future research with large samples to elucidate. It may be

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possible that situational factors which tend to agitate and disorganize the stutterer are also causal factors in the development of hyperthyroidism.

Defects

1. Rating: Rate N - No, Y - Yes.
2. Findings: One Y in the B group.
3. Some Possible Inferences: This one instance is insufficient to have even suggestive value except that it is possible to achieve a good adjustment in spite of the presence of a physical defect.

Ears

1. Rating: Rate A - normal, B - slight impairment (<40 db), C - (>40 db).
2. Findings: All A ratings.

Nervous System

Enuresis

1. Rating: No - N, Yes - Y.
2. Findings: All N.

Temper Tantrums

1. Rating: No - N, Yes - Y.
2. Findings: All N.

Nailbiting

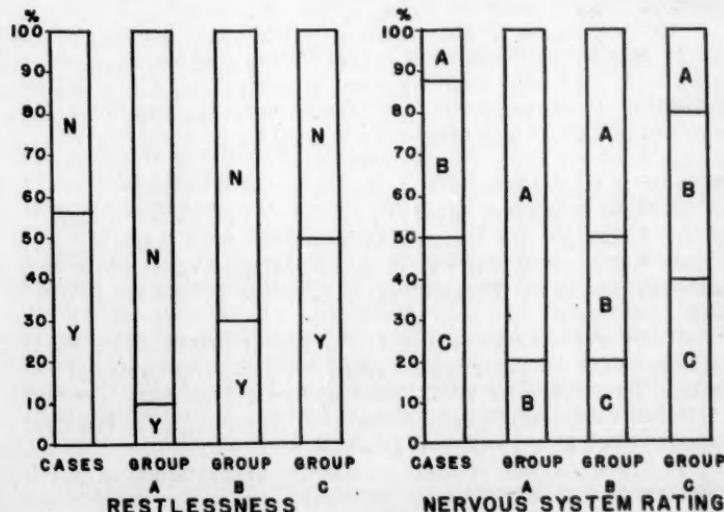
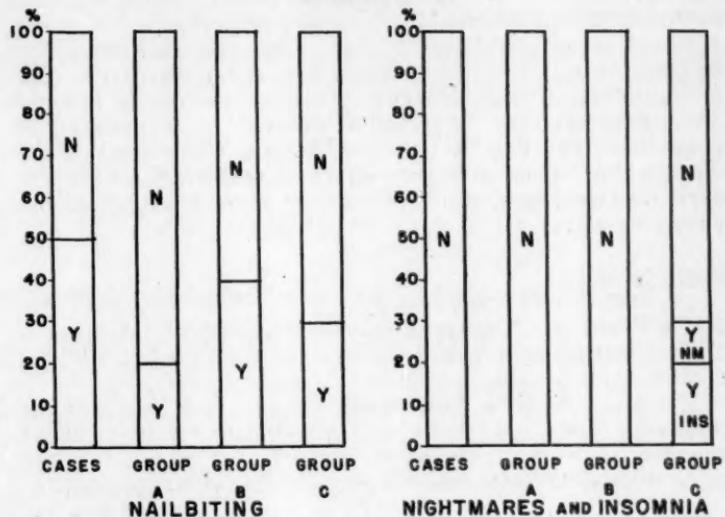
1. Rating: No - N, Yes - Y.
2. Findings: Half of the stutterers nailbite. However, 40 per cent of Group B nailbite. Group C, where nailbiting might be more to be expected, shows 10 per cent less than Group B. Even Group A provides 20 per cent nailbiters.
3. Some Possible Inferences: It would appear that, while nailbiting shows a high correlation with stuttering, it is a common phenomenon among boarding school boys, being present to a noticeable degree in both well and poorly adjusted groups. As an indicator of nervous tension, it would seem to suggest that a large proportion of even our best adjusted boys are living under certain strains which are reflected more in the two less well adjusted groups and especially among the stutterers.

Nightmares and Insomnia

1. Rating: No - N, Yes - Y.
2. Findings: Nightmares and insomnia show up only in the C group.

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CHART 5



PHYSICAL-NERVOUS SYSTEM

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3. Some Possible Inferences: It is of possible significance that though the stutterers show no hay fever, asthma, eczema, nightmares, or insomnia, these symptoms appear in the poorly adjusted group who do not stutter. This may shed some light on psychosomatic diseases and their possible relation to stuttering. As Dr. White remarked, "They (psychosomatic diseases and stuttering) seem to be 'all of a piece.'" The maladjusted person in search of a symptom fastens his anxiety in one direction or, due to a process of conditioning, develops a particular response, or the weak spot in his physical makeup shows the strain.

Restlessness

1. Rating: No - N, Yes - Y.

2. Findings: The presence of restlessness presents a clearly increasing incidence from Groups A to B to C with the stutterers showing the highest incidence.

3. Some Possible Inferences: Restlessness seems to be positively correlated with poor adjustment. It is an overt symptom of inner strain which makes its presence a valuable guide in detecting adjustment problems. Dr. Gallagher marked one boy as also having a tic and three boys were checked + i.e. showing a high degree of restlessness. One of the B group was marked "slight" and one + i.e. very high.

As restlessness, like nailbiting, occurs in all groups, it would imply that none of the groups are completely serene. Even some of our best adjusted individuals would probably appear harassed to people of a calmer cultural climate as they watched their restless behavior and nailbiting!

Nervous System Ratings

1. Rating: Rate A, B, C, D.

2. Findings: The Nervous System ratings as given in Chart 5 show a graduated increase in lower ratings as the adjustment becomes less good. This histogram deserves careful consideration.

If the cases were at the right, the incidence of A and C ratings would appear stepped with A ratings diminishing and C ratings increasing as adjustment becomes less good. On this basis we call the stutter group less well equipped as to Nervous System rating than the C poorly adjusted group.

3. Some Possible Inferences: The serious problem of interpretation of these Nervous System ratings hinges on whether we are going to say, "Of course those with poorer nervous systems are less well adjusted," or whether we are going to press the inquiry further and from a cross-cultural viewpoint ask, "Was

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it necessary that these nervous systems - though less rugged - should be inadequate to a passably smooth adjustment? Would this be true in all cultures? Should we blame the nervous system or the culture?"

Probably it is a question of the nervous system and the culture. This problem will be discussed further when we weigh conceptual schemes.

Social - Personality

Anxiety

1. Rating: A - very little, B - moderate, C - light, D - severe.

2. Findings: There is the least anxiety in the A and B groups although they both show some incidence of the B rating. The stutterers show a great deal more anxiety than Group B but far less severe ratings than Group C. The stutterers have 12 1/2 per cent C ratings. Group C, however, has 40 per cent C ratings and shows 10 per cent D ratings.

3. Some Possible Inferences: The less favorable anxiety estimated for the stutterers and C group are according to Horney specifications (12). She lays anxiety at the root of neurosis. Others may blame an inherent weakness of the nervous system. Probably the truth, as is usually the case in these differences of emphasis, includes the interplay of both factors.

However, as causes of anxiety should be easier to change than constitutional weaknesses of the nervous system, we shall turn our attention to possible sources of this anxiety. The presence of some anxiety in our well adjusted groups and overwhelming percentages in the stutterers and Group C leads us to feel that this is a common factor - as common nailbiting and common restlessness might have forewarned us - and needs our keenest observational analysis and social insight to provide a diagnosis of social ills at their social source. We cannot expect our search for sources of anxiety to be a simple or superficial one but much work has been done on this subject and the cross-cultural lens is a valuable aid.

Incentive:

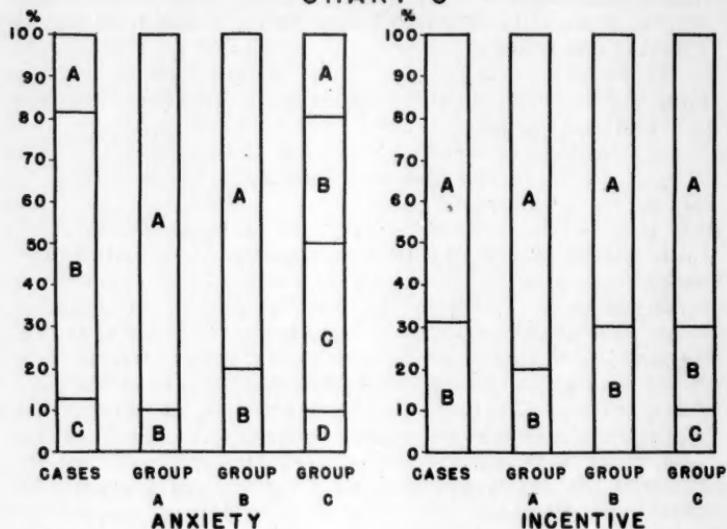
1. Rating: A - considerable, B - average, C - very little.

2. Findings: The Incentives histogram as shown in Chart 6 seems of negative value. There are no appreciable differences outside of 10 per cent more A's in the A group and a C in the C group.

3. Some Possible Inferences: If anything can be inferred

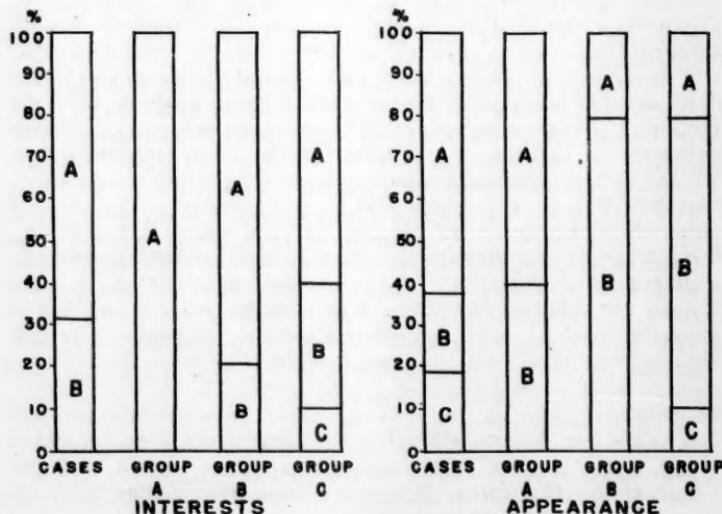
CHILD DEVELOPMENT

CHART 6



ANXIETY

INCENTIVE



INTERESTS

APPEARANCE

SOCIAL-PERSONALITY

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from the preponderance of A ratings in all four groups, it is that only boys with a high amount of incentive get to this particular boarding school with its high entrance requirements and scholastic standards.

Interests

1. Rating: A, B, C.
2. Findings: Interests follows the "step" pattern as to the A rating with the cases somewhat higher in A than the C group and the C's with a C per cent.
3. Some Possible Inferences: The cases and Group C have fewer interests than the better adjusted groups. This tends to suggest the neurotic narrowing of horizons due to anxiety and inhibitions.

Appearance

1. Rating: A, B, C - sloppy, careless.
2. Findings: It is interesting to note that the cases and the A group are equally neat in appearance while the B and C groups have only 20 per cent with A rating.
3. Some Possible Inferences: The data do not bear out a possible impression that stutterers are "sloppy" and careless in personal appearance.

Confident (Assured) - Uncertain

Assured: Showing self-confidence, self-possession, natural faith in the self; without obvious feeling of inferiority, insecurity, or isolation. Uncertain: doubtful of the self; unconvinced of the rightness of personal judgments and actions; fearful of rejection by others; anticipating failure in any enterprise; insecure.²

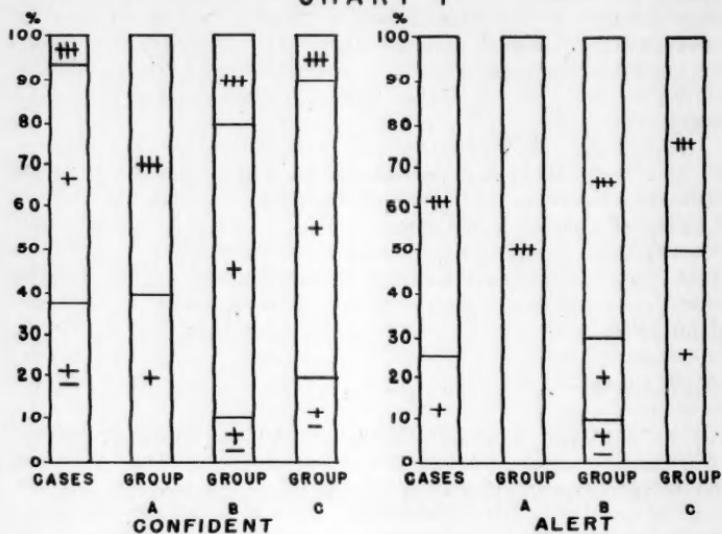
1. Rating: +, +, +, ++, - highest.
2. Findings: If we were to put the cases to the right of Group C, the stepped loss of ++ confidence and rise of + negative confidence, uncertainty, would be very clear. As we see confidence shrink from 60 per cent ++ in the A group to 6 1/4 per cent in the stutter group and 10 per cent in the poorly adjusted group, we have some picture of the happiness or misery which these little symbols connote.

3. Some Possible Inferences: The development of confidence in the adolescent is a challenging educational problem and one with wide ramifications, particularly when looked at from a cultural angle. As an antidote for insecurity and anxiety, con-

²Definitions of character traits used in this section are quoted from a publication by the Grant Study, April 1943 (33).

CHILD DEVELOPMENT

CHART 7



SOCIAL-PERSONALITY

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fidence is the best remedy. As we see the syndrome of anxiety, insecurity, lack of confidence, and fear of rejection building its tottering house of cards as a life structure for the individual, we cannot offer superficial short cuts to "success" - personal or social - for an individual thus conditioned. He is a social hazard to himself and others.

The problem is: Why don't we, as a culture, build a majority of CONFIDENT people instead of fearful ones? This is our problem and we must scrutinize and analyze it from all angles. It is not enough to know that this social "agar agar" exists; we must do something about it. And where is a better place to start than in the comparatively controlled educational environment? We may not be able to recreate adults and have ideal home situations over night, but values and goals and character patterns can be built into the social framework of a school where cooperatively as a joint enterprise each person learns to become an acceptive psychotherapeutic force for the good of all (19). These same individuals trained in beneficial habits of human relations stand a better chance of becoming the "ideal" parents of tomorrow.

This is possible. Do we dare attempt anything so nobly human? Why not?

Alert - Dreamy

Alert: attentive; bright; interested in conversation; maintaining constant rapport. Dreamy: inattentive; wavering attention; distant rapport; "faraway look"; preoccupied.

1. Rating: \pm , +, ++, ++, highest.

2. Findings: The ratings on alertness are highly positive for the whole group; the only negatives are 10 per cent for the B group.

3. Some Possible Inferences: As in the case of high incentive, this alertness is not surprising in a boarding school with high standards of scholarship and entrance requirements. However, as a widespread personality trait, it may verge on hyper-reactivity and a state of nervous tension which is definitely an excited state. When viewed as a chronic condition, it would probably be considered "abnormal" by certain societies with a slower pace. The Navahos laugh at the whites "who always hurry and get all excited."

Our culture is probably the breeding ground for future manics as we goad them to be constantly active, constantly alert, keeping the spring wound tight for years on end. It is not that lethargy should be sought but a certain alternation of alertness with relaxation more in keeping with the exigencies of the occasion would make "more sense" than continual and

CHILD DEVELOPMENT

widespread intense reaction to stimuli.

Even - Changeable

Even: not labile, runs along "on an even keel." Changeable: characterized by variations in mood either endogenous or reactive to precipitating situations.

1. Rating: \pm , +, \pm , highest.
2. Findings: Groups A and B are much more "even" than the stutter group or Group C. However, the stutterers are definitely less changeable than the C group.

Drive

1. Rating: \pm , +, \pm , highest.
2. Findings: The cases are closest to the C group. The \pm diminishes from the A group to B, C, and is least in the stutter group. However, the C group has some \pm incidence which is lacking in any of the other groups.
3. Some Possible Inferences: It is not surprising that the 90 per cent \pm drive in the A group correlates with the best adjusted boys. Enterprise, initiative, and ambition are highly esteemed and rewarded in our culture.

Relaxed - Tense

Relaxed: at ease; not strained. Tense; giving the impression of being tightened within the self; stiff.

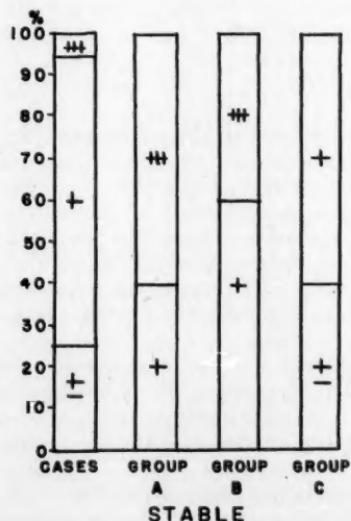
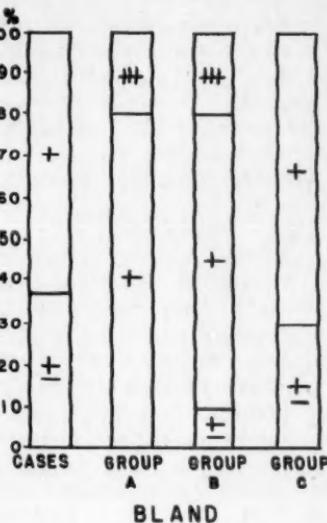
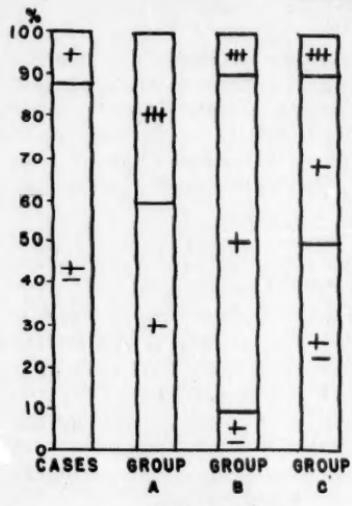
1. Rating: \pm , +, \pm , highest.
2. Findings: 87 1/2 per cent of the stutter group are tense; 50 per cent of the C group are tense, i.e. \pm relaxed; none of Group A are tense and only 10 per cent of Group B.
3. Some Possible Inferences: The sources of the 50 per cent tension in the C group and 87 1/2 per cent in the stutter group must be investigated. Here the physiological symptom of tension is a barometer for stresses and strains of less obvious nature.

The times when the tense person is relaxed are of significant value in helping to determine what are the most advantageous situations, attitudes, occupations, or environments for that particular individual. Needless to say, the apprehensive individual is not usually going to be very relaxed when he knows he is undergoing a medical or "constitutional" examination. We need to follow these tense boys in their daily rounds to see what circumstances are most beneficial and what pressures most damaging to their composure. Tension is a very reliable "maladjustment indicator." It can be ignored only at great peril to the individual.

A 50 or 87 1/2 per cent incidence of the symptom of tension

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CHART 8



SOCIAL-PERSONALITY

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is not to be lightly passed over. Neither is it easily remedied, but the situation can be alleviated by various means. Certainly in shaping personalities and molding manhood, chronic tension must receive clever attention. Frequent therapeutic interviews with a psychiatrist who is available to talk with the boys when they are "in the mood" might give them a welcome chance to air their worries and bring hidden conflicts to the surface. In conjunction with this, environmental strains should be relieved wherever possible.

Bland - Sensitive

Bland: showing neither warm positive mood nor richness and vitality of affect. Apt to be colorless and neutral; stable, however, since such individuals do not possess complex and highly reactive emotions. Sensitive: possessing a richness and refinement of affect which pervade the whole personality and are revealed in such features as greater complexity, more imagination, more subtlety in thinking, greater emphasis on cultural values.

1. Rating: \pm , +, $\#$, highest.

2. Findings: The bland trait disappears after Groups A and B: C and the stutter group have rising sensitivity - 30 per cent in Group C and $37\frac{1}{2}$ per cent in the cases.

3. Some Possible Inferences: This sensitivity is part of a syndrome of heightened self-consciousness, alertness, tension, and anxious apprehension.

Stable - Excitable

Stable: steady, not easily shaken or overcome. Excitable: easily stirred up, tending to lose self-control and to become impatient easily; temper outbursts.

1. Rating: \pm , +, $\#$, highest.

2. Findings: Group C is somewhat more excitable than the stutter group. The cases show 25 per cent \pm , while Group C shows 40 per cent \pm . Also, there is a small percentage of $\#$ stable boys among the stutterers while there are none in the C group.

The A and B groups are the most stable. Neither group has any \pm ratings. The A group leads in stability with 20 per cent more $\#$ ratings than the B group.

The comparative order of relative presence of stability between the four groups follows the order: Group A, B, stutterers, then C. This is clear in the gradation of each rating incidence if, in the histogram (Chart 8), the case column is placed between the B and C groups.

3. Some Possible Inferences: It would seem from the

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present evidence that the stutterers, though unstable as a group when compared with the very well and average adjusted boys, are less unstable than the poorly adjusted boys. The similarities, however, between the C group and the cases as opposed to the better adjusted groups might suggest that they have some problems in common and that conditions which might prove beneficial to one might have certain favorable effects on the other. This is only a tentative insinuation which future controlled and measured observations would confirm or deny.

Friendly - Asocial

Friendly: showing a warm response to people, a liking to be with them, and an interest in them. Asocial: preferring to be alone; withdrawing from groups; deriving more pleasure from solitude and individual pursuits than from groups or group activity.

1. Rating: +, ++, #, highest.
2. Findings: The stutter and the C group are exactly equal in degree of friendliness which is well below the maximum for Groups A and B.

3. Some Possible Inferences: The anxious or maladjusted person has repressed hostilities towards people in many instances and also an overweening Fear of Rejection or Fear of Rebuff (12). This is a sign of social illness and emotional sensitivity and suffering. The boy without friends is caught in a vicious and self-perpetuating cycle of unhappiness. Such "lonely" boys should be spotted and congenial room-mates found at great pains. Here, at least, a start can be made as well as working on the underlying factors which have tended to bring about this lonely tendency.

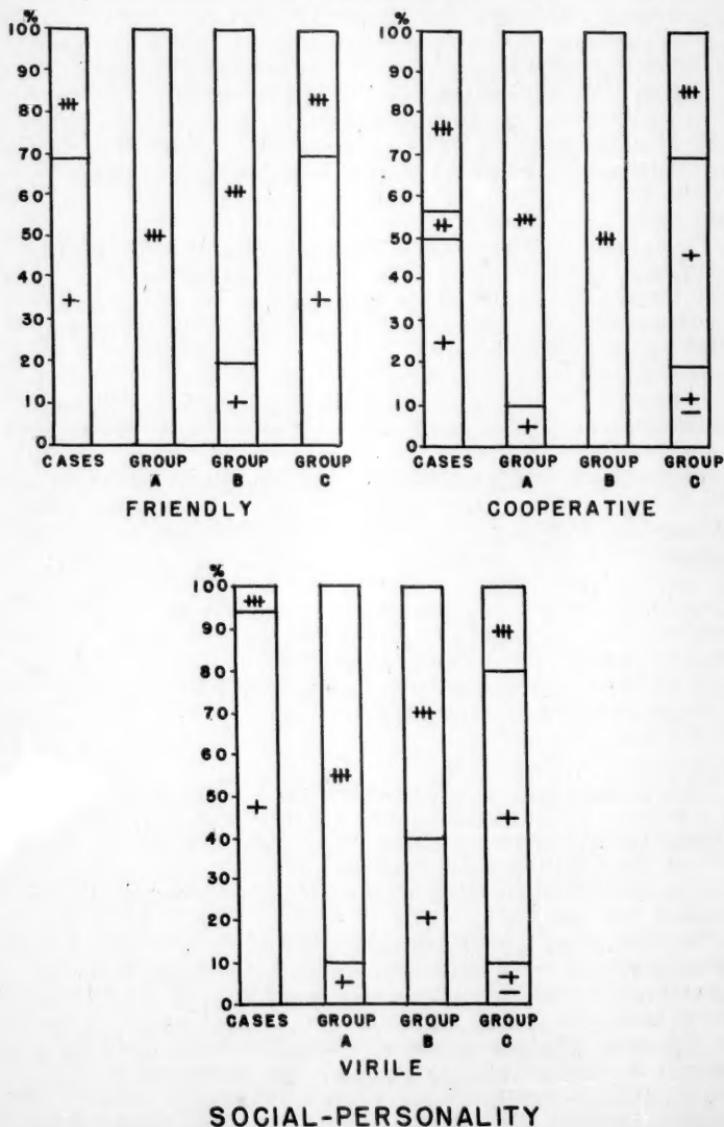
Cooperative - Independent

Cooperative: willing to enter in and share work in a common enterprise; able to forego individual inclinations and become part of a cause. Independent: following individual beliefs and inclinations; uninfluenced by accepted opinion and effort; self-contained and self-centered in choice of activity.

1. Rating: +, ++, #, highest.
2. Findings: The stutter group is more cooperative than the C group but far less cooperative than Groups A and B.
3. Some Possible Inferences: The stutter and C groups manifest the withdrawing and self-centered characteristics of the neurotic who is cramped with fears and inhibitions.

CHILD DEVELOPMENT

CHART 9



SOCIAL-PERSONALITY

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Virile - Effeminate

Virile: giving an impression of strength and forcefulness; rugged; often possessing well-developed musculature.

Effeminate: the mincing expressive movements, soft voice, delicacy, grace, or mannerisms usually thought of under this category; homosexuality not implied.

1. Rating: \pm , +, \pm , highest.

2. Findings: As would be expected, the A group is 90 per cent maximum virile. The B group is less so and the stutter and C groups are not high in the virile trait. Most of the rating is + with a little \pm and 10 per cent \pm in the C group.

3. Some Possible Inferences: The prize goes to the virile boy in our culture. No wonder he is well adjusted. But it must be borne in mind that other boys of other types are also being educated to meet life "head on" and their solution cannot be worked out on the football field. They too must be given a chance to develop confidence and a feeling of security. It is a challenge to the educator in these days of wholesale "military" standards to provide the ways and means for the satisfactory and satisfying development of the less virile boy. The heart of the problem lies in the fact that his accomplishment must be hailed with equal recognition and he must feel an equal glow of triumph to that of the athletic hero or he still will be saddled with an inferiority complex.

Prestige satisfactions can be built up by traditional honoring of pursuits other than athletic ones but these goals and values have to be held in real esteem over a period of time before the individual can feel sure of the comparative value of his accomplishment and hence reap the benefits of confidence and security which should be made attainable for any "body build."

Social

Popularity with Mates

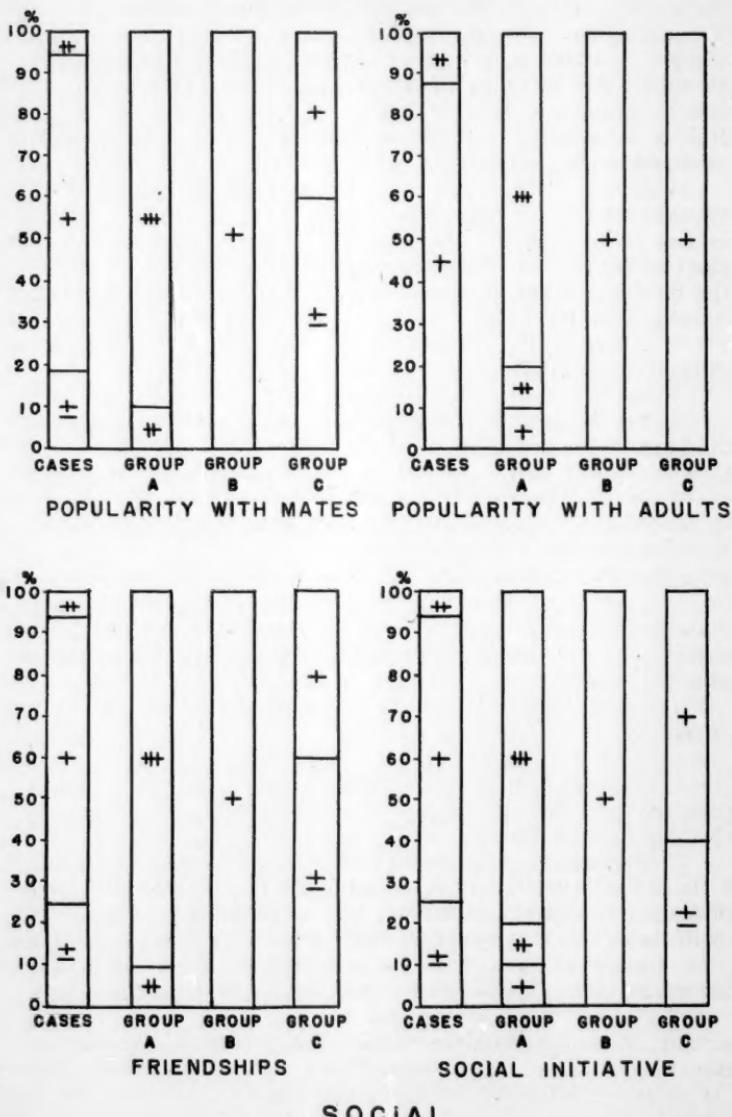
1. Rating: \pm , +, \pm , \pm , highest.

2. Findings: Group A is naturally in the lead as to popularity with mates. However, it is interesting to note that the stutterers enjoy a good deal more popularity than Group C and are almost as well situated as Group B. Group B is all + (average) whereas the cases have 6 1/4 per cent + although a more than offsetting 25 per cent \pm .

3. Some Possible Inferences: The presence of minus popularity in both the cases and in 60 per cent of the poorly adjusted C group calls for further close scrutiny. As we view the school situation as a whole, it is important to analyze it and

CHILD DEVELOPMENT

CHART 10



SOCIAL

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note whether a circular causal process is in operation (16, p. 111) whereby undesirable tendencies are being reinforced by daily situations and thus intensified rather than alleviated as in a benign situation. These problems do not lend themselves to simple solutions but there are ways to attack the difficulty both through planned favorable occasions where the individual has a chance to display what prowess he may have in some particular line or by consciously throwing him with boys who will not be annoyed by his tendencies.

Where the difficulties are of such a nature as to be a universal social irritant, some psychotherapeutic work or individual counseling and guidance is indicated. Many unpleasant traits can be overcome during these formative years and it is clearly the duty of educators to see that they turn out confident and likeable persons as well as persons equipped with knowledge.

Popularity with Adults

1. Rating: \pm , +, \pm , \mp , highest.
2. Findings: None of the boys are unpopular with adults and the stutter group is $12\frac{1}{2}$ per cent ahead of either Group B or C.

3. Some Possible Inferences: Probably the stutterer tends to seek adult companionship more than those who are more comfortable with their own age grade. In certain ways, adults offer fewer difficulties than age mates. The competitive factor is not present. Also the pattern of respect, manners, etc., which the young person tends to use in relation to the adult, augurs a more propitious reception with less irritation to the adult.

Friendship

1. Rating: \pm , +, \pm , \mp , highest.
2. Findings: A leads and B is +. However, the stutter group well outdistances Group C where friendships are concerned. The C group shows a 60 per cent incidence of \pm rating.
3. Some Possible Inferences: With 60 per cent \pm for Group C, it seems to suggest that these boys need psychotherapeutic guidance in making the most of their social relations. Conflicts, hostilities, resentments, heightened self-consciousness, inhibitions of one sort and another and other social and psychological factors must stand in the way of their natural relationships with their fellows. They need counseling or a beneficent situation, or both, to bring them into pleasant and confidence-creating experiences with their contemporaries.

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Social Initiative

1. Rating: \pm , +, ++, ++, highest.
2. Findings: 40 per cent of the C's are \pm whereas 25 per cent of the stutterers are minus.
3. Some Possible Inferences: Due to the stutterers' difficulty in interaction, one might suppose that they would show lower Social Initiative than Group C. However, since this is not the case, it tends to focus our attention on the causes for low initiative among the poorly adjusted C group. This should receive further investigation.

Further Discussion of the Five SOCIAL Charts:

In all five SOCIAL histograms (Charts 6-10) the A and B groups hold their allotted leads with easy strides. Much of this popularity and ease in social relations must be viewed in its constitutional and environmental framework. For which boys is life at this boys' boarding school congenial? Which abilities lead to prestige and recognition? Are certain types of boys fostered and rewarded at the expense of other types?

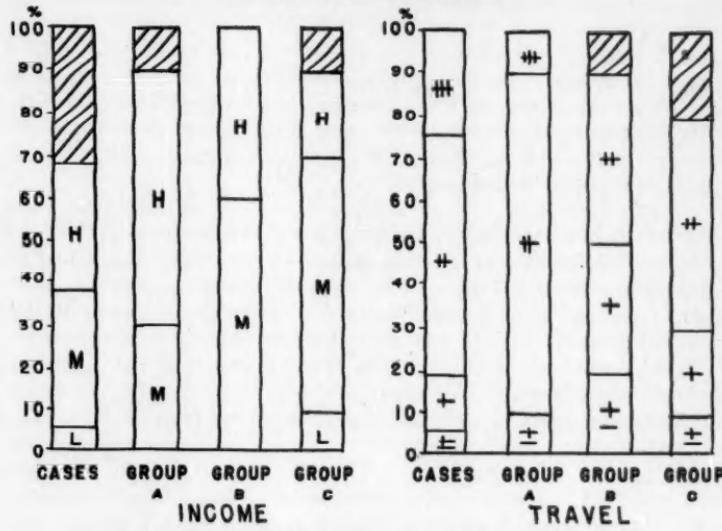
At present much of this consideration is mere speculation and based on inadequate data but it is sage to hazard a guess that the athletic build has a distinct advantage. We also have seen that academic interest correlated with the stutterers and the poorly adjusted. Why is their supposedly "appropriate" interest insufficiently rewarding to result in poise?

Should there be more open and widespread honoring of pursuits other than athletics? Is not the problem of the educator that of educating each child according to "the best that is in him" to bring out his latent potentialities? To pour boys into a military mold may not be enough! This is a difficult problem today but because it is cruel and ruthless, it should not be shunned. The world is going to need leaders of many kinds. One kind is not enough. But leaders in any line must have confidence born of success in early efforts.

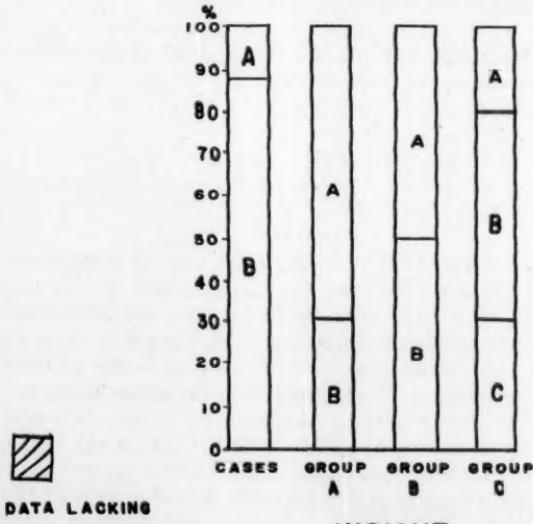
Thus, even if many fields of endeavor cannot be followed immediately, early rewards may outlive the war years and bring the boy back to a line which had given him early satisfaction and recognition. Therefore these values and goals must be made attractive and rewarding in other than military aspects unless we wish to build a predominantly military society for the future. It is impossible to estimate the value of early reward and recognition and the part it may play in shaping a career later in life. The aggregate effect on the society may be of extreme significance in determining future trends of the culture and its culture values.

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CHARTS II AND 12



ECONOMIC - CULTURAL



INSIGHT

CHILD DEVELOPMENT

Insight

Judgment (Self-Appraisal)

1. Rating: Maturity (opinion-decision), A - good, B - average, C - poor.

2. Findings: The degree of insight is stepped with the stutterers' having a lower percentage of rating A than Group C although Group C shows 30 per cent C rating which pulls their average well below the cases. High degree of insight is importantly correlated with Group A.

3. Some Possible Inferences: The role of education in helping to develop in the individual a clear understanding of himself and his problems is no small or easy job; however the importance of insight as a factor in excellent or good adjustment seems to be indicated by our present data. When teacher counseling does not seem to be producing satisfactory results, as in the incidence of C ratings in the C group, it might suggest that psychotherapeutic guidance should be provided. (In exploring certain aspects of this problem, the recent book by Rogers, "Counseling and Psychotherapy," is of interest (27).)

Also the possibility that in certain cases insight into their problems might be a means of helping to reduce the prevalent symptoms of tension, restlessness, and nailbiting should not be overlooked. Rogers writes:

The individual is under a degree of tension, arising from incompatible personal desires or from the conflict of social and environmental demands with individual needs.

and Lewin says:

... Restless behavior is a diffuse, undirected discharge of tension...

However, we do not wish to intimate that insight is going to produce miracles in an oppositional environment. The environmental impacts of a particular environment on particular individuals with particular constitutions should be carefully studied. Lewin suggests the vital importance of "systematic investigation of environmental changes with the same individual." (16, p. 73.)

Economic-Cultural

Income

1. Rating: 1500, low - L; to 20,000, medium - M, over

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20,000, high - H.

2. Findings: Although data are not available at this time for 5 of the stutterers and for 1 of Group A and 1 of Group C, nevertheless the trend would seem to indicate that the best adjusted group, A, is predominantly high having 60 per cent with incomes of over \$20,000 a year. Both of the better adjusted groups, A and B, show no low incomes (and only 1 case is missing), whereas both the stutter and C groups show the presence of the low income brackets, which is \$1500.

3. Some Possible Inferences: It is not surprising that in the competitive setup of a large boarding school the low income group boy has a handicap to social adjustment and the boy whose family has an income of over \$20,000, other things being equal, has a distinct social advantage.

Travel

1. Rating: ± Just within state, + Occasionally N.Y.C. or West, #, ## extensive.

2. Findings: The stutter group and Group A show about 80 and 90 per cent incidence of extensive travel as compared with 40 and 50 per cent for Groups B and C respectively (maximum of only 50 and 70 per cent possible for Groups B and C if the missing data proved to be "extensive").

3. Some Possible Inferences: These findings would tend to show that amount of travel is not a specific determinant of stuttering or best adjustment. Probably the "definition of the situation" is an important factor about which further investigation might be made. It is possible that travel in the sense of changing residence or going for "emergency" reasons would have a very different effect from leisurely recreational travel under "ideal" conditions.

Family

Parents' Education

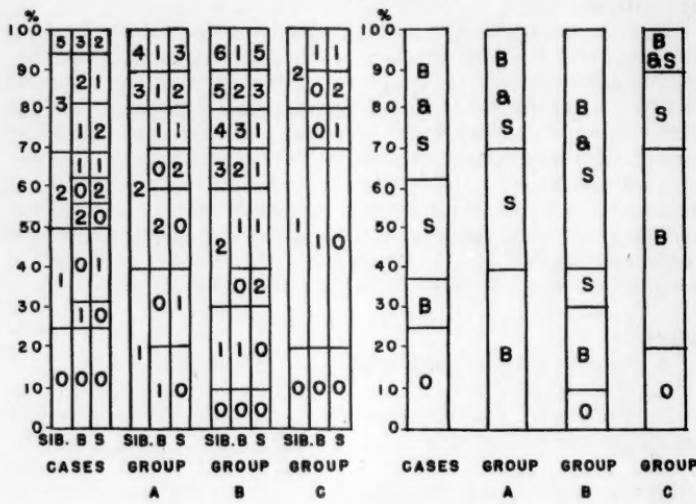
1. Rating: The legend appears to the right of the histogram (p. 44). The column for the stutter group in this instance represents the ten cases about which we have data as to both parents' education. Therefore the comparisons with the control groups are on a 1 to 1 basis for this item. It was felt that to see the comparison of the "combined" family educational status might be of interest.

2. Findings: The fathers of each group are predominantly college men: 80 per cent for the group of 10 stutter cases and for Group A; 90 per cent for Groups B and C.

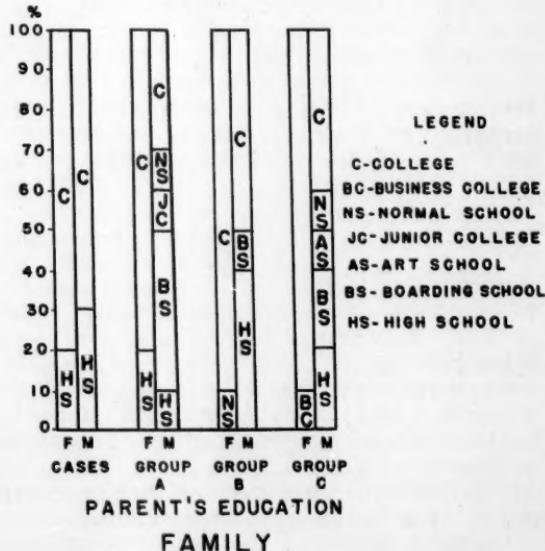
However, among the mothers of the 4 groups, the mothers

CHILD DEVELOPMENT

CHART 13



SIBLINGS



LEGEND

- C-COLLEGE
- BC-BUSINESS COLLEGE
- NS-NORMAL SCHOOL
- JC-JUNIOR COLLEGE
- AS-ART SCHOOL
- BS-BOARDING SCHOOL
- HS-HIGH SCHOOL

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of the stutter group are 70 per cent college women as opposed to 30 per cent - Group A; 50 per cent - Group B; and 40 per cent - Group C.

3. Some Possible Inferences: Whether the college trained mothers are "benign" influences on their children is a challenging question. In a later section of this paper we shall discuss the attitudes and adjustment of the mother. Also it is worth contemplating whether the college mother may tend to be more critical of speech and place high value on certain situations and accomplishments which hinge on speech performance. If this were the case, it might lead to heightened self-consciousness in speech situations and fear of disapproval which might predispose the child to the development of the speech symptom as a result and manifestation of his underlying anxiety.

Siblings

1. Rating: Siblings - Sib., Brother - B, Sister - S.
2. Findings: Group A has no "only" children while Groups B, C, and the stutter group show an increasing incidence of "only" children.

The percentage incidence of families with two children is in the following order: Group B - 20 per cent; Stutterers - 25 per cent; Group A - 40 per cent; Group C - 60 per cent. In two-children families of the stutterers, only one has one brother. Of Group C, five have one brother. None of Group C have more than two siblings, i.e., a family of three children ~~in~~ all.

3. Some Possible Inferences: It is of interest to note that 60 per cent of the C group families are composed of two siblings - the situation in which the classic Sibling Rivalry is apt to come to fullest flower! However, among the stutterers the two-sibling situation is less, and in the one case of two brothers it is the younger brother who stutters. The older brother is 18 years old. The present data would seem to indicate the correlation of small families and total of two siblings with poor adjustment rather than with stuttering in particular. The stutterers show the highest incidence of "only" children.

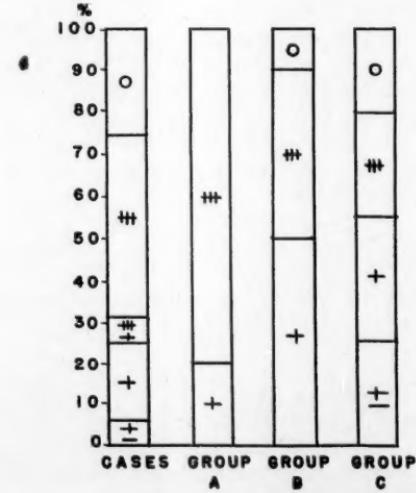
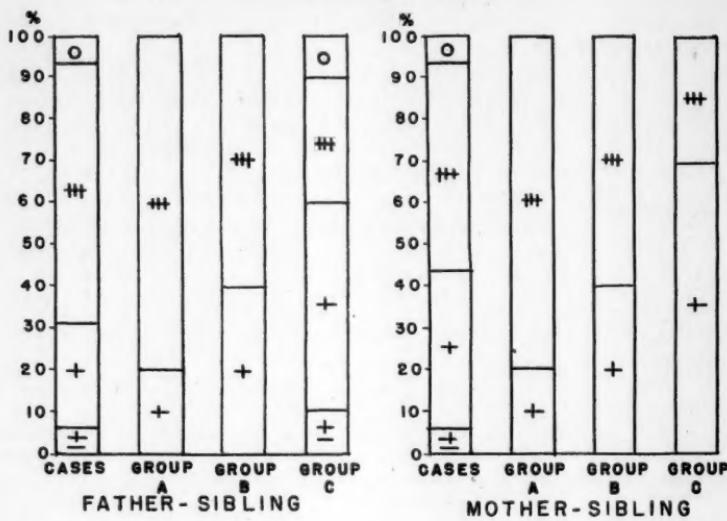
Father-Sibling

1. Rating: Friendly ++, Tolerates + or +, Unfriendly †.
2. Findings: Group A leads with 80 per cent ++ friendly relations between the father and son. Group B has no unfriendly † incidence but is about equal to the percentage of friendly relations in the stutter group. The unfriendly relations occur only in the stutter group and poorly adjusted C group.

3. Some Possible Inferences: The presence of unfriendly relations in the stutter and C groups is significant as is the fact

CHILD DEVELOPMENT

CHART 14



SIBLING RELATIONSHIPS

FAMILY

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that the C group is decidedly less favored as to Father-Sibling relationships. The role of the father and his relation to his son is extremely important in helping to produce feelings of security and confidence in the son. Where this "emotional support" is lacking, insecurity, anxiety and lack of good adjustment are likely to result if other compensatory factors are not present. This will be discussed further in connection with the mother's role.

Mother-Sibling Relationship

1. Rating: Friendly #, Tolerates + or +, Unfriendly ±.
2. Findings: It is of interest to note that the cases have 50 per cent friendly relations with the mother and 62 1/2 per cent friendly relations with the father. However, the C group has no unfriendly relations with the mother while an unfriendly percentage is present with the father.

The A and B groups are identical for both Mother- and Father-Sibling Relationships with no unfriendly instances.

3. Some Possible Inferences: The diminishing friendly relations from A to C is significant, with the cases somewhat better off than the C group.

Sibling Relationships

1. Rating: Friendly #, Tolerates +, Unfriendly ±.
2. Findings: The sibling relationships of the stutter group equate closely with the relationships with the parents. The A group is identical with the parent relationships and the B group has only 10 per cent more tolerates (+) than with the parents. However, the C group shows definitely more unfriendly instances.

In the C group, several comments bear out the sibling strains. One boy "doesn't get along with his older brother." Another boy doesn't like his older sister but does like his younger sister. (In this instance the rating has been divided in percentage on the histogram.)

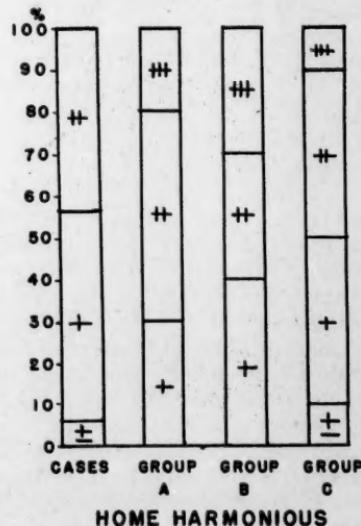
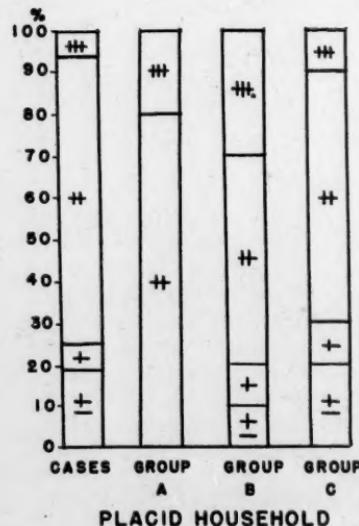
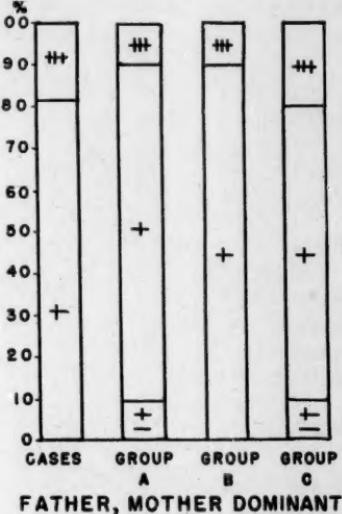
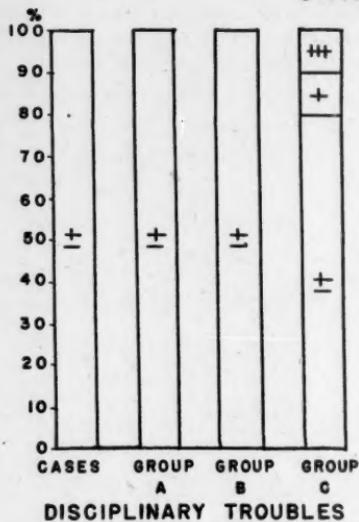
3. Some Possible Inferences: The poor sibling relationships of the poorly adjusted group are significant.

Disciplinary Troubles

1. Rating: ± none, + slight nagging, # severe, strict, constant.
2. Findings: Only the C group display +, slight nagging, or #, severe, strict, constant.
3. Some Possible Inferences: Except for the poorly adjusted group, this presents a rosy picture. However, it must be asked if the home situation were known more intimately whether

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CHART 15



FAMILY

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"slight nagging" would not be observed more commonly. It is not "rare" in our culture as a whole.

Father, Mother Dominant

1. Rating: Degree of dominance - †, +, #, highest.
2. Findings: The cases and Group C show about twice as much high parental dominance as Groups A and B.
Low dominance is present in Group A and also in Group C.

Placid-Active Household

1. Rating: Rate placid # (very quiet), + (moderately active, social life, clubs), † (hectic, always out, hubbub).
2. Findings: The cases have the smallest percentage of placid households. Group A are entirely #, very quiet, or +, moderately active. The other three groups show some hectic households, the cases and Group C having somewhat greater incidence than Group B.
3. Some Possible Inferences: The low occurrence of placid households among the stutter group is very significant as is also the case with the C group. Direct interviewing and observation in the home over a period of time would be a valuable aid in checking these estimates.

Home Harmonious - Tense

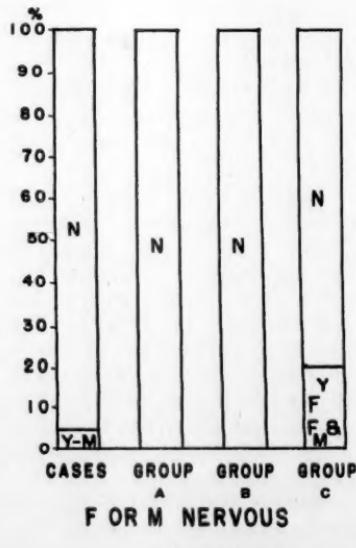
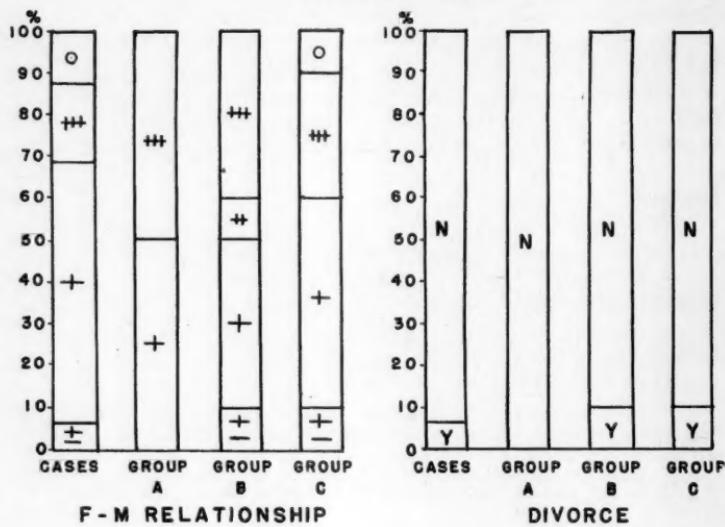
1. Rating: Harmonious # (benevolent), + no friction, + average, † eternal squabble.
2. Findings: Groups A and B show 20 per cent and 30 per cent benevolent rating, and benevolence is even present in Group C. However no home in which stuttering has developed can be termed benevolent.

3. Some Possible Inferences: Although the percentages are not tremendous, it seems of the utmost significance that not one of the stutterers has a benevolent home situation. Here is where, it seems to me, field work is strenuously indicated or "family case work" in the case of children. Home situations - tensions, strains, repressions, frustrations, the whole grab bag of marital and familial problems are severe irritants for the stutter-type child. And many of these problems are not inevitable or unsolvable. When particular danger zones are clearly delineated and stresses either eliminated or compensated for, much headway may be made in preventive work or early treatment of incipient cases of stuttering.

It is to be noted that only the cases and the C group show + Eternal Squabble!

CHILD DEVELOPMENT

CHART 16



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Father-Mother Relationship

1. Rating: \pm unfriendly, + average, $\#$ very amicable.
2. Findings: The cases show least $\#$ very amicable. Group A is the only one with no \pm unfriendly.
3. Some Possible Inferences: As we correlate the findings in Father-Mother Relationship with the preponderance of college trained mothers, it again raises the question as to the satisfactory adjustment of the college woman to the conventional role of wife and mother in the middle and upper classes.

Divorce

1. Rating: Yes - Y, No - N.
2. Findings: Divorce is not present in the A group.
3. Some Possible Inferences: Presence of divorce is not conducive to "best" adjustment.

Father or Mother Nervous

1. Rating: Yes - Y, No - N.
2. Findings: One nervous mother shows up in the cases and two nervous fathers and one mother in Group C. Neither Group A nor B have nervous parents!
3. Some Possible Inferences: Nervous parents are liable to have a child who makes a poor adjustment. The one nervous mother of the stutterer definitely influenced the development of his symptom as the case history reveals but since the other 15 stutterers do not have nervous parents, there must be other determinants of the development of the stuttering in children.

As none of the best adjusted boys or boys in Group B have nervous parents, it is safe to say that calm parents are an asset!

Cases - Responses to Interview Questions

As a preliminary investigation of certain aspects of the stutterer's life history, each case was asked to answer a set of 15 questions (p. 52) tabulated on Chart 25. Dr. Gallagher did the questioning. The results offer many clues for future investigation. In some instances additional questions may clarify the present data; in other instances a psychiatric interview on a deeper psychological level is definitely indicated. To continue this analysis by a supplementary set of psychiatric interviews based on the present information might add extremely significant data.

With this in mind the collection of data in Chart 25 should be analysed in great detail. However, at this time it is only possible to call attention to a few of the outstanding trends.

CHILD DEVELOPMENT

QUESTIONNAIRE 2

When did speech trouble begin

Do you know why (imitation, illness, fright)

Any other in family

Has it been absent for periods and then returned

When is it worst - conversation, reading aloud; mates, adults;
recitation, strangers

What words bother (sister, brother, etc.)

When is it least troublesome - dramatics; poetry; girls; singing

What letters bother most

Is it a handicap in school

What has been done previously

Previous school record

Present preparatory school record

Reading - spelling - handwriting

Reading - handedness in parents and siblings

Tests: Handedness - Intelligence

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Inspection of the data should provide additional information for anyone interested in particular aspects of the results as the answers are tabulated in fairly complete form with only two "symbol" abbreviations employed. "N" stands for "No" or "None," and "AV." means "average."

It will be noted that over half of the cases started to stutter at the ages of 6 or 7, that is, around the time of beginning to go to school. One boy, 11, began when he changed schools and two boys, 10 and 14, started while in boarding school.

It is of interest that six out of the ten reasons given for the onset of stuttering involve threatening situations or difficult individual adjustments. The threatening situations include being frightened by a maid, threatened by a camp counsellor, and forced by the German police to attend a "Hitler" school. The threat to social security involved in difficult adjustment includes anxiety in connection with the study of English, going to a new school, and leaving home and family to come to the United States.

It should be noted that in the case of the boy visiting Germany, the German language created the added complication of the bilingual situation with a new and unfamiliar language. The bilingual factor enters also into the case of the boy who was born in France but whose mother would not allow him to speak French. This would tend to inhibit spontaneous speech and, plus the fact that the mother stuttered, might very conceivably lead to stuttering in the boy.

The other three reasons given represent the mother's interpretation rather than the boy's. They are of interest as in two instances the handedness was changed and one involved imitation of a schoolmate at boarding school. It is significant to carefully consider the fact that the teacher forced the boy to use his right hand. As well as the changing of handedness, this insinuates the presence of the psychological concomitants of the teacher's disapproval and dominative origination to the pupil. This situation in itself constitutes a threatening situation, a threat to social security, from the pupil's point of view. Certain aspects of these psychological factors will be discussed in a later section of this paper.

It is perhaps surprising to find such a low incidence of other cases in the family. In the thousands of cases Dr. Greene has treated, there have been many instances of other cases in the family. Further data from a statistically valid sample may conceivably alter this result.

Several poor spellers and left-handed and ambidextrous relatives are listed, as well as one instance of lisping.

The problem of periodicity should be gone into at great

CHILD DEVELOPMENT

lengths as times when stuttering is less frequent or absent imply what are favorable environments for the individual or times when his physical "machine" has greater tolerance for rejection, frustration, etc. It would be valuable to carefully compile chronological life history sheets as is done at Johns Hopkins and at the Massachusetts General Psychiatric Laboratories. These list the years in the left column followed by kind of illness if present during that year.³ To the extreme right appear the significant life events for each year. The recurrence of psychosomatic disease seems to show a high correlation with periods of stress in the life history. These indicate warnings and show at what times and under what situations personal adjustment should be "handled with care." Knowledge of just this nature may be invaluable in helping to pilot the stutter-type safely past the shoals of stress.

The next two questions as to when stuttering is worst and when it is least offer clues along this line. This deserves searching psychological and sociological analysis and interpretation. These few comments can only suggest several of the approaches which might prove fruitful. That more than half of the stutterers say that stuttering is worst during school recitation should direct our searching scrutiny to factors in this situation which may be particularly adverse to the stutterer. Also it is a place where therapeutic practises might be inaugurated during any attempt to alleviate the occurrence of stuttering as well as instituting measures of a more "preventive" nature of possible benefit to the majority of the students as well as to the stutter-type.

Four cases mention "conversation" and one each notes the following occasions: Strangers, When Excited, Arguments, Reading Aloud, Public Speaking. The majority of these connote the presence of the feeling of a threat to social security in relation to one's fellows (the Leighton's category cited on p. 77), heightened self-consciousness, fear of rebuff, rejection, or disapproval, and an increase in "emotional temperature" (Greene concept further defined by the writer through an exact count of the number of occurrences of stuttering in a known situational setting) when excited or during arguments. These situations should be analysed further with a high degree of psychological and social insight.

Equally challenging is the interpretation of the situations in which stuttering occurs least. The fact that six cases report

³Our Questionnaire 2 should have included the frequency and intensity of stuttering as nearly as the patient or relatives or teachers could estimate.

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Dramatics as most favorable is highly suggestive. There are extreme implications in the fact that it is so beneficial to "escape one's own ego." Dr. Kluckhohn has suggested that research along the lines of Moreno's "Psycho-drama" might prove very fruitful.

It is important for the whole approach to the interpretation of stuttering to clearly recognize the emotional and psychological factors that are involved in the occurrence. Though constitutional and other aspects such as handedness and heredity may easily enter into the Stutter Syndrome, the fact that the stutterer does not always stutter cannot be lightly brushed aside. If hemisphere dominance were the only factor involved or if body build were a major determinant, the symptom could appear and disappear only as there also occurred changes in the hemisphere dominance or body build.

That stuttering is a highly complex problem requiring penetrating research by experts in a number of fields is obvious. At this stage of research, it would be extremely premature for anyone to feel that he had found "the" answer.

The fact that four have least difficulty when singing is very suggestive. The fact that in school much of the learning of singing is done by group rather than individual performance leads us to a consideration of the effects of conditioning and the lower incidence of individual "punitive" conditioning as related to singing as compared with situations involving conversation, reciting, or reading.

The instance of "shouting" would tend to remind us of the favorable influence of the dramatic situation. Also, the fact mentioned in the same case that there was less difficulty experienced when the material was well prepared would imply uncertainty, hesitancy, and confusion due to lack of knowledge are adverse factors for the stutterer just as they are to the normal speaker to a slighter degree. In a similar situation, the normal speaker might "er-er" or fumble for words where the conditioned stutterer would actually stutter.

The problem of which letters actually bother is approached today from a very different angle than in the days when speech specialists measured "easy" and "hard" letters. Though there are some articles still written along this line, the more fruitful approach would seem to be by an interpretation of the meaning to the individual either as a symbol of repressed conflict situations as "brother" where sibling rivalry is present, letters to which the individual has been "conditioned" through unfortunate emotional circumstances which led to momentary hesitancy on a particular syllable, or letters which occur frequently in adverse situational contexts

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and also about which the learning has not been perfectly clear. An example of this last category would be "wh" which appears twice in our 16 cases. Dr. Greene (8) has pointed out that "wh" is actually pronounced as "hw." This causes confusion about its formation. In noting this point, I have also observed in situations in which "wh" occurs frequently as in asking questions - "what," "where," "when," "why," etc. - there is also frequently present a situation in which the individual feels a Fear of Rejection, Rebuff, Disapproval, or feels in awe of someone in Authority.

The treatment of stuttering is as yet in a very experimental stage. That none of the cases have been "cured" is not surprising.

Four boys feel that their stuttering is a handicap in school. Six feel it is a slight handicap. Two say "very slight." One says it is not a handicap now but used to be, and three boys feel that their stuttering is not a handicap.

The school records show

School	Preparatory School
Excellent	2
Good	10
Average	1
Fair	2
Poor	0

(Data lacking for 1 boy) (Data lacking for 2 boys)

The most difficulty seems to be encountered in writing:

Good	3
Average	1
Slow	1
Fair	5
Fair to Poor	2
Poor	2
Very Poor	1

(Data lacking for 1 boy)

Spelling and reading are predominantly "average" and "good." That reading requires no original organization of thought in a situation of some self-consciousness and stress is doubtless an advantageous factor. It would be important to elucidate this further as to the amount of stuttering actually occurring during reading. If stuttering is relatively absent, this would be of great interest. However, none of the cases list reading as a situation in which stuttering occurs least so

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there may be some question of interpreting these ratings. Whether being able to understand the words or to reproduce them without stuttering is being evaluated here, should be checked. Recitation, which it will be recalled displayed some of the highest incidence of stuttering, does require memory and organization so may easily result in more stuttering than reading under a similar situational stress.

Laterality

Edwin M. Cole, M.D., has collected the data as to laterality by means of administering the following tests:

Handedness

1. Cutting. Scissors and ball of string. Place scissors with holes toward chest. Blindfold.
2. Tapping. Counters. Use hand dominant in scissors test first. Blindfold. Tap with forefinger 100 times. Then use other hand. Repeat with second hand and then repeat with first hand. Time with stop watch. (Omit repeats if faster with dominant hand.)
3. Shot Tube. Use flask and glass beads (19 or 20). Have flask in bowl so that beads will not fall on floor. Blindfold. Use dominant scissors hand first. Time.
4. Hammer. Board, hammer and nails. Hammer placed perpendicular to patient. Blindfold. "See if you can drive nail into board." Note hand picking up hammer.
5. Wind string. Blindfold.
6. Ask: Write; Throw; Deal; Knife; Bat.

Footedness

1. Ask: Kick.

Eyedness

1. Visual acuity: s OD OS OU
c OD OS OU
2. Phoriae.
3. Remarks: Are glasses worn usually? Are they worn for testing?
1. Card hole. Card with hole 1.3 centimeters in diameter. Keep both eyes open. Sight the light through the hole, holding card in both hands. Note eye used.
2. Microscope. Ask if ever used one. Note eye used.
3. Kaleidoscope. Note eye used.
4. Cardboard telescope. Sight distant object and note which

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eye was used.

5. Mirror. Nose in ring.

The results of these tests are recorded in Chart 24.

1. Rating: Right "R"

Left "L"

Ambidextrous "A"

R - all right except one

R = all right except two

R ≈ all right except three

L - all left except one

L = all left except two

L ≈ all left except three

A right ambidextrous 2 out of 5 criteria

A right ambidextrous 3 out of 5 criteria

2. Findings: Eight boys were all Right. Six boys had mixed laterality, and two boys were mostly Right with a trace of Left.

3. Some Possible Inferences: Dr. Cole is interpreting this data in combination with other material so that there is a larger sample from which to draw inferences. As the 16 boys here are divided almost evenly between right and mixed dominance, there are no significant trends that appear from casual inspection except the fact that there are no boys with complete Left dominance.

I am not conversant with the literature or theories on laterality so shall leave the significance of these data for Dr. Cole to estimate.

However, it may be of interest to note the situation as to handedness among the Navaho. Flora L. Bailey (2) writes:

Hill states that left-handedness appears to be more prevalent among Navahos than among whites. Some men prefer not to marry a woman who is left-handed because she is different. That it appears undesirable to some Navahos, is evidenced from the fact that several informants give information about attempts to change a child from left-handed to right-handed tendencies.

The father of one boy tied up his left hand in an effort to make him use the right hand instead. In this same family two other members of an older generation were left-handed, one of whom was successfully changed over and the other not.

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One woman states that usually people don't care whether or not a child is left-handed, although the younger Indian parents try to correct it. Older ones don't mind. This would lead one to wonder if schooling had an influence on the pattern. The same informant states that a girl would be more likely to be corrected in a left-handed tendency than would a boy, because a girl couldn't cook and sew as other women do if she remained left-handed. She tried to correct left-handedness in one of her daughters by always handing things to her in her right hand, but decided it was too hard to do "because there is more strength in your left hand than in your right if you are left-handed."

As we consider the question of handedness, it may be pertinent to call to mind the fact that all of the non-literates do not have the problem of writing until they reach the white schools. If, as Bailey's comment suggests, more of an issue of handedness develops after white schooling, the fact of learning to write may have a bearing on the situation of hemisphere dominance and possible changing of handedness.

Somatotypes

From the histograms of the somatotypes for the four groups compared as to the relative incidence of each component, as shown in Charts 17 and 18, the following observations may be made:

Component 1: The cases are higher in the incidence of endomorphy although no rating is over 5. The A group has the lowest ratings on the first component.

Component 2: Groups A and C are both high on mesomorphy with a fair percentage of "6" ratings. The stutterers are lowest on mesomorphy.

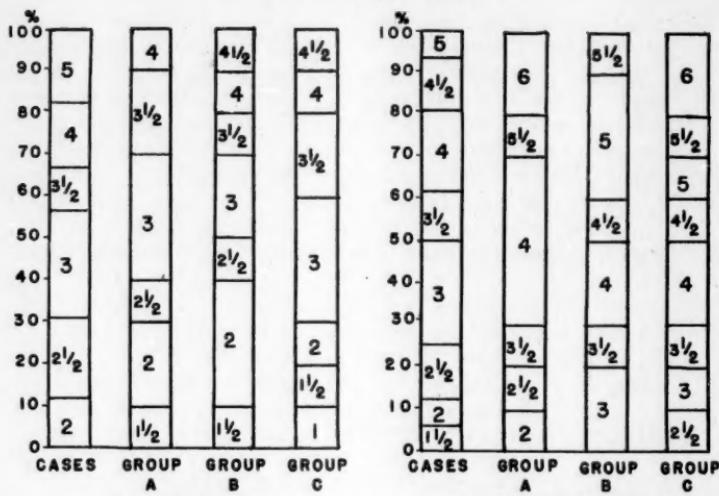
Component 3: The stutter group shows the highest rating on ectomorphy. The cases show an incidence of 6 1/2 rating whereas 5 1/2 is the highest for Groups A and B and 4 is the top for the C group.

The fact that the poorly adjusted boys are not extreme ectomorphs would seem to suggest that the poor adjustments they have made, the psychosomatic diseases which occurred exclusively in that group, and the high incidence of signs of tension are not a result of ectomorphic tendencies in the body build.

Also of interest is the fact that in the case of CDE with somatotype 2²-5-3, described in Charts 24 and 25, a hectic

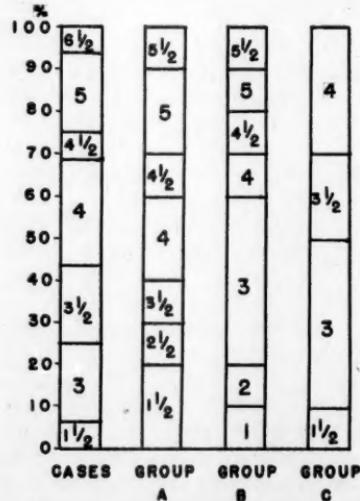
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CHART 17



COMPONENT 1

COMPONENT 2

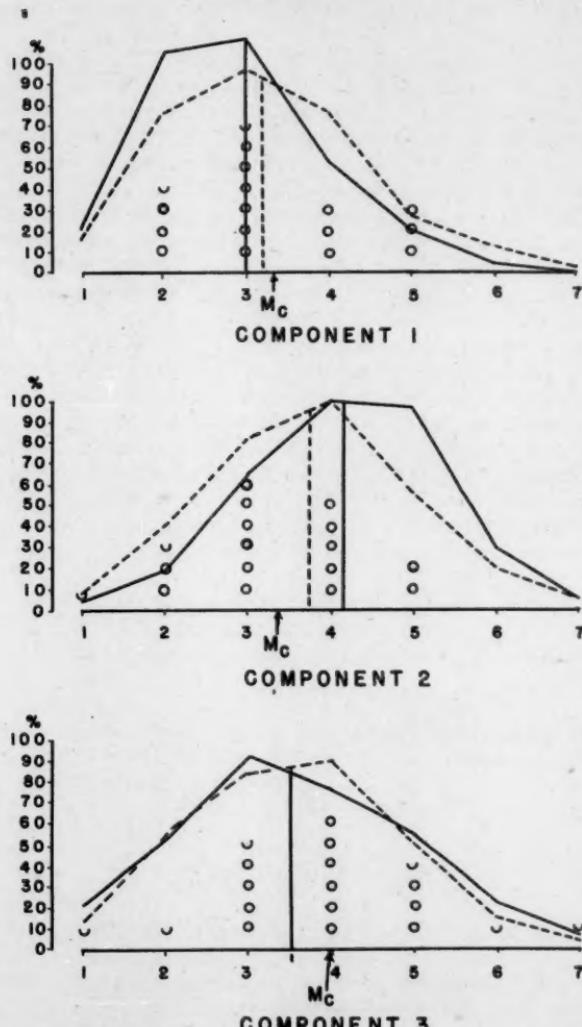


COMPONENT 3

SOMATOTYPES

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CHART 18



○ CASES — 312 BOARDING SCHOOL BOYS -- SHELDON'S 4000 MEN

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household, fairly average or adverse family ratings, low insight, B health and incidence of illness all combine to create anxiety in him sufficient to manifest tics and stuttering in spite of a large body build.

Likewise, in the case of LSM, a "pyknic" build with somatotype 5-4-12 showing more than average mesomorphy, we find a "C" rating for Nervous System with stuttering and nailbiting symptoms. However, this boy's mother is in a mental hospital; the family are divorced; he lives with an uncle; the mother stuttered; and this was the boy who lived in France but was not allowed to speak French. If he had not had high frustration and rejection tolerance with a stolid body build, his outcome might have been far worse than the present condition. A high ectomorph in similar circumstances might well have developed a worse fate.

These above cited cases go to show that body build cannot safely be followed as a diagnostic of stuttering. The combination of body build and environmental pressures and adverse factors must be taken into consideration. However, in the comparison of the four groups there is a trend in the stutter group towards slightly higher endomorphy and ectomorphy with a lower occurrence of mesomorphy. These distributions are not far from the mean for college men (Chart 18) but show wider deviation as compared with the curve for 313 boarding school boys.

That there is a difference between the adolescent curve and that for the college men is of interest. It is still a debatable question as to whether the average curves for the pre-adolescent, adolescent, and adult populations would be identical or not.

Dr. Stevens' assistants felt that although there was a slight deviation from the average in the case of the stutterers, the range was too wide and the incidence too near an average distribution to be of diagnostic value.

Anthropometrics

The anthropometric measurements (Chart 24, pp. 82-83, and curves shown in Charts 19-23) secured from Dr. Carl C. Seltzer, indicate that the stutterers are a physically differentiated and principally biologically inferior group as measured by certain things. Comparing their means with those for a series of 68 sixteen-year-olds from the same school indicates a difference. Unfortunately the σ values are not available so that it is impossible to tell if the differences are significant or

CHART 19

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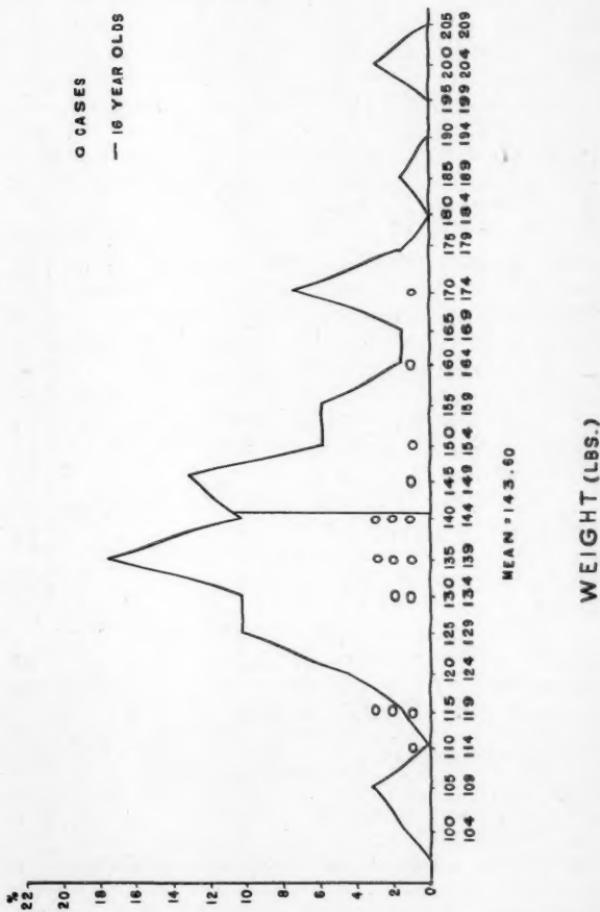


CHART 20

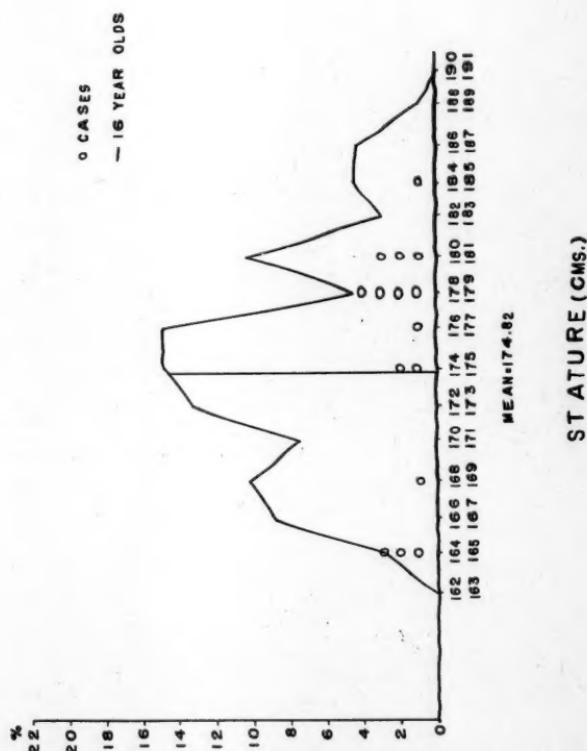
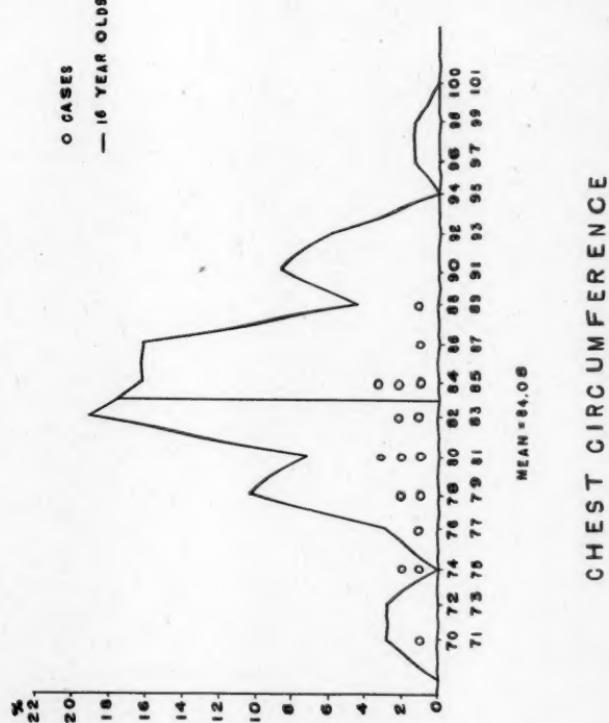
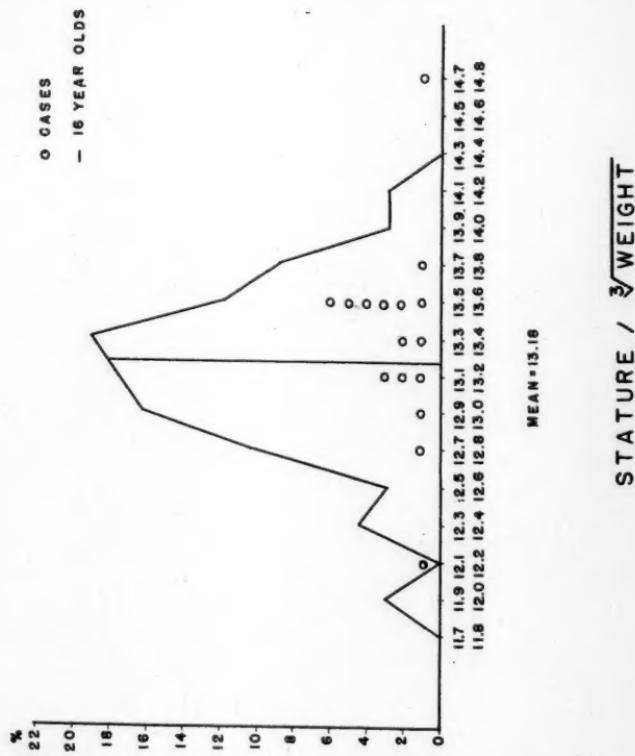


CHART 21



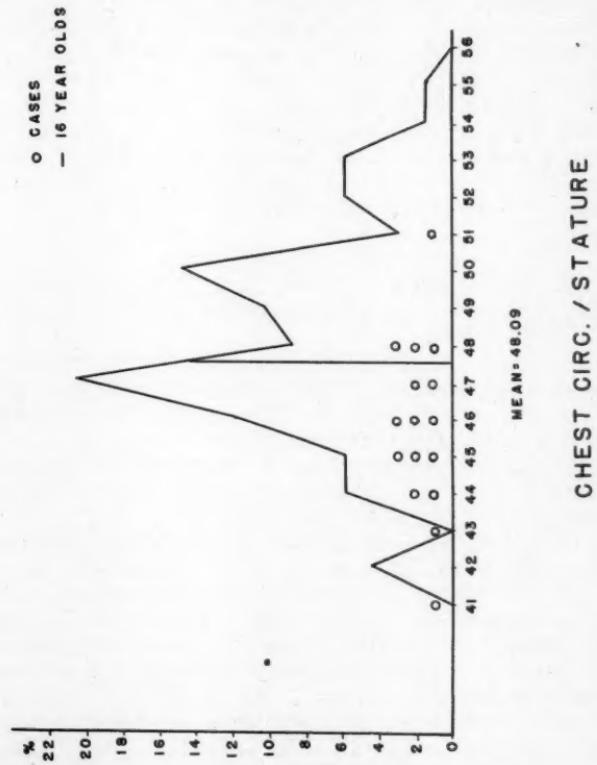
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CHART 22



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CHART 23



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not, but from an inspection of the ratios it seems that the stutterers are lighter in weight, smaller in the thorax, and have narrower shoulders, while their stature is about the same. Their relative sitting height is a little less. This is illustrated more clearly by the curves.

It is interesting to note that of the stutterers 10 of them are lighter, 11 are taller, 13 have narrower shoulders, 12 have less chest breadth, and 11 have less chest depth and lower sitting height than the series of 68. These findings seem to indicate a greater physical differentiation than is indicated by comparing the means. This suggests that some of the stutterers are good physical specimens. That these, who raised the physical average of the group, have trouble suggests that the cause must have been severe in their cases. That such was the case is borne out by the fact that about half of those with the best physiques also gave a story of emotional shock as the cause of the onset of stuttering.

Conceptual Schemes

Introduction

At this point in our discussion we shall try to bear in mind the wise words of Boas and "be always clearly conscious of the sharp line between attractive theory and the observation that has been secured by hard and earnest work" (18, p. 155). It is only as hypotheses grow out of actual observation and can be re-checked by further observation that they can claim to have some measure of validity and reliability.

With this process in mind, we have presented the foregoing data as a check on our original hypotheses gained from work in the field and observation in our own society. The trends which may thus indicate a preliminary vindication by the present study should be considered carefully and salient items checked by statistically valid case and control samples. These should number a thousand or more. As we proceed thus cautiously with our "concept-building" and continually check the hypotheses against further and more reliable collections of data, we can hope to avoid some of the pitfalls of applying "attractive theory" too soon and yet unmistakably recognize where our problems really lie and how it may be possible to tackle them. If these practical applications are made with insight into the real problem and with controlled observation to measure the results, "applied anthropology" may occur simultaneously with the "research" approach. We shall have a living, clinical laboratory provided by our own and comparative peoples and cultures.

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In these human laboratories our work must be done. And we must marshal all the tools we have. Anthropology with her brother and sister sciences must join forces. The brother sciences of biology and medicine, the sister sciences of psychology and sociology, and the abstract parent subject from which the Greeks derived science itself, philosophy, must not be omitted from a place among our "conceptual schemers." The life philosophy of the individual and the social philosophy of his milieu have measurable effects on his sympathetic nervous system. We need controlled experiments which combine philosophy and physiology. We will do well to consider whether the method of science cannot come back to philosophy as its grateful offspring and by applying itself to problems of ethics and social philosophy develop a scientifically sound "scientific humanism" (14, p. 175).

It is via the life philosophy of the individual and the social philosophy of his times that in some way a "coming to terms" with reality is achieved. We may call this "adjustment." When this adjustment encounters difficulties, the "emotional temperature" of the person rises just as fever indicates bodily ills. If we can measure the occurrence of these difficulties by some indicator manifest in the physiology or behavior of the individual, it is our duty not to overlook these measurable clues. Both for the benefit of the individual and the benefit of the culture as a whole, we should learn what these clues may tell us. As Sapir (30) wrote in 1927,

... if we make a level-to-level analysis of the speech of an individual and if we carefully see each of these levels in its social perspective, we obtain a valuable lever for psychiatric work.

Development of Concepts

It is not a new thing for speech to be used as a means of revealing psychological situations. The psychoanalytic use of the concept of "blocking" is well known. As to stuttering,

Freud maintains that the words or sounds that cannot be pronounced are related to painful incidents or shame-provoking experiences of childhood the memory of which has been repressed . . . Another theory of stuttering, proposed by Adler, is that it constitutes a withdrawing mechanism due to an attitude of inferiority. The stammerer, feeling inferior and ill at ease, hesitates to speak lest he be repulsed, hence the inhibition develops . . .

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The theory of stuttering that holds most in common with the objective psychological viewpoint is that of Fletcher which holds that the condition is not a true speech defect but is a personality maladjustment. The stutterer suffers his greatest difficulty when speaking as a social communication. His trouble is therefore a subtle fear of social contact, an emotional response to the presence of his auditors . . . emotion destroys the precision of any movements except those that are very highly learned. In those children whose unfortunate emotional conditionings occur when they are speaking, stuttering will result. When the fear is experienced in other situations, various other maladjustments may be formed . . . The circumstances, then, determine which individuals will develop the particular maladjustment of stuttering. No single experience is sufficient, except in rare cases, but cumulative conditioning over a period of time will fix the habit of stuttering. Later stuttering becomes a circular nonadjustive reaction. Fear causes stuttering, the apprehension that he will stutter when he talks causes fear, and the victim is bound in a vicious circle that is hard to terminate. (31, pp. 247-248.)

Dr. Greene of the National Hospital for Speech Disorders in New York City evolved a theory of stuttering similar in some respects to Fletcher's. In 1923, Dr. Greene pointed out that the problem was "centered in the field of human emotions" (9). Today the general consensus of opinion seems to confirm the idea that the underlying cause of stuttering is a state of anxiety, an emotional maladjustment. Blanton, Brown, Solomon, Clark and West agree with Greene that stuttering is an emotional and personality disorder (9). Greene has clearly outlined his theories as to the Stutter-type Personality in two articles (9, 10), as well as treating various aspects of the problem of stuttering in numerous articles and a book, "The Cause and Cure of Speech Disorders" (8).

Reference will be made to Greene's work and anyone who is interested in the details would do well to consult the above-mentioned publications. Because of the thousands of cases of stutterers who have been treated at Dr. Greene's hospital, he is one of the persons best equipped to shed light on the constitutional aspects of the problem: a large research staff, constantly at work on the problem from both the medical and psychological approaches, is making significant contributions.

Greene's over-all approach may be suggested from the following excerpts:

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Theoretically, it is assumed that the stutter-type personality is one born with a special organic structure having constitutional factors which all but parallel the constitutional factors of the nonstutter-type. The stutter-type is an extremely sensitive personality, in which the emotional range always overreaches that of the nonstutter-type. This human organism is not always destined to stuttering speech. Only an environment of opposition accentuating the native conflicts to which one is conditioned can evoke stuttering in its various forms; a neutral or favorable environment does not provoke or condition the individual to stuttering. The oppositional environment may be encountered either in early childhood or in adulthood. Consequently, a particular kind of unfavorable environment may evoke stuttering from this organic stutter-type either in childhood or in adult life. A specially created environment, such as our Medical-Social Clinic, which is favorable, is the means by which the patient is unconditioned. That is, he is brought back to his initial stage or prestuttering state of security...

Years of observation and work have convinced me that stutterers are not speech defectives as conventionally understood. They can all speak normally under certain conditions. Their intermittent spasmodic speech is not the result of defective oralization but is conditioned in the stutter-type of personality by highly emotionalized states of mind. They are agitated human organisms... Uncannily, they are moved back and forth across the borderline between emotional balance and emotional imbalance (9).

Periods of unusual environmental stress occur several times in the life of the individual. The first occurs in childhood, generally around the time the child goes to school, and consists of the impact of social life with the comparisons of one's self with the others of one's own sex and age which it involves. The second period, in adolescence, is due to the impact of the whole complex of sexual facts on the as yet unprepared young person.

The genesis of the stutter-type most often occurs during the first period of stress, either on account of the underlying neuropathic diathesis or of both hereditary and environmental factors combined (10).

As we get this glimpse of the lines along which Greene is working, it is easy to step from the data in our own culture to the investigation as we have carried it out from a cross-cultural approach. The questions we have asked in tackling the

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problem in other cultures have been simple and straightforward.

1. What is the incidence of stuttering in the culture?
2. In what situations has stuttering developed?
3. How do these facts relate to the situation in our own culture?
4. Is there anything that can be done about it?

Inferences from Data in Terms of Conceptual Schemes

As we take a quick glance at the facts we have gleaned thus far, let us limit our considerations in the present paper to the bare essentials. Elaborate minutiae of refined analysis are not justified by the inadequate number of cases available at this time and the comparatively rough data which it has been possible to collect from other societies. However, this does not eradicate the value of the trends which are manifest in the present data.

Let us tabulate the answers to our questions as they appear to us in 1943. When we ask

1. What is the incidence of stuttering in the culture?

we can say

- A. It seems to be relatively rare among the Navaho. However, cases are known to occur in the culture and are reported occasionally in the white school and where known culture conflict situations exist.
- B. No known case of stuttering has been reported among the New Guinea tribes mentioned above. One case of stuttering was mentioned to Mead in the Arapesh.
- C. No cases of stuttering were noted among the Australian tribes visited by Warner and Birdsell. However, a possible incidence with natives in the white schools is suggested.
- D. Ekblaw knew of no stutterer among the 250 Polar Eskimos with whom he lived for four years in Greenland.

When we consider

2. In what situations has stuttering developed?

we can note

- A. White schools.
- B. Culture conflict situations.
- C. Several cases of unknown "provenience."

As we press this inquiry and ask

3. How do these facts relate to the situation in our own culture?

we are faced with the fact that education and conflict situations within our own culture must receive our careful scrutiny. For

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before we can presume to answer

4. Is there anything that can be done about it?
we must know where we stand. When we recall that Greene has pointed out that there is a high incidence of stuttering during periods of stress and that "The genesis of the stutter-type most often occurs during the first period of stress . . . generally around the time the child goes to school, and consists of the impact of social life with the comparisons of one's self with the others of one's own sex and age which it involves" (10), we are faced with some clear questions. Also, of the 16 cases studied, 9 had their onset around 6 and 7 years of age. We cannot dodge these issues.

People qualified to evaluate these facts in terms of educational psychology are needed to carry the implications of these facts further but we cannot pass lightly over the present cross-cultural evidence which would tend to suggest that in the non-literate societies studied, stuttering is rare within the culture itself but occurs in New Mexico or Australia when the child meets the white school system. This cannot be explained away on the basis of a racial predisposition theory. The Navaho, native Australian, or our own children may become emotionally disorganized under the pressure of the "white school" or the "white culture."

What have the non-literates got that we haven't got or perhaps we had better ask, what don't they have that we have and would be better off without? Maslow and Mittelmann (19, pp. 222-226) may shed some light on certain educational aspects of the problem in their discussion of some of the psychological effects of "Authoritarian Education":

A widespread belief holds that, more than anything else, a child must learn to obey. Only when he has learned this is he fit to lead, to stand on his own feet. The observations of modern psychology prove that this is for the most part wrong; if one wants the individual to be independent, courageous, and capable of thinking for himself, then he must be trained and educated for independence, courage, and self-reliance and not for submission and dependence. . .

It is unquestionably true that one of the primary aims in education is to make the child a willing, moral, law-respecting member of society, and that discipline and social training are therefore necessary. But more than this is necessary. His education must enable him to feel secure and independent as an adult. This is obviously impossible if the discipline is so rigorous that it endangers

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the child's self-esteem and independence . . .

Some miscellaneous characteristics of authoritarian education are: 1) setting up the teacher as omniscient and omnipotent, one who can make no mistakes; 2) giving him unquestioning obedience; 3) regarding him as made of a different clay, as someone who has no passions, who is aloof from the world, who never cries or laughs; 4) being punished frequently; 5) being humiliated; 6) being given grades, report cards, examinations, the general purpose of which, from a psychological point of view, seems to be to make education a competition in which everyone is pitted against everyone else; 7) learning by rote without understanding.

The effects of authoritarian education are varied. It may destroy self-reliance, independence, and courage (self-esteem); it may create "the model child," the masochistic teacher's pet, or a child who obeys his superior but dominates and tortures the weaker children . . .

Psychopathology is fostered in a society in which the old threaten the young, and children are legitimately and conventionally frustrated, humiliated, and sneered at, punished freely, and made to feel worthless and inferior - all this done by "good" men and women. Such a society creates gratuitous conflicts and frustrations, and holds out before the individual a goal which he can never reach, but which is described in such glowing terms that only if he possesses it can he respect himself and feel that he has a place in the world. This society creates aggression and hostility by all these means, but gives the individual no legitimate, socially useful outlet for this piled-up energy, hence it can only emerge later in life in the form of hatred, envy, or jealousy directed against younger or weaker people. This makes the whole system self-perpetuating; for these younger people, grown up, will pass it all on to their inferiors.

This quotation has been included in rather complete form because when we consider that this is the opinion of psychologists in 1941 and has been edited by no less an authority on social psychology than Gardner Murphy, we cannot fail to weigh these "charges" seriously and with an open mind. If our present educational procedure is producing known undesirable psychological effects on all its students, and if, according to Shaffer (31, p. 246) and others, between one and two per cent of all school children are disorganized to the point where they cannot talk with ease, it is time some educational "social

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invention" occurred. It is up to the educators to devise ways of coping with their known problems that will have more auspicious results.

However, I feel it is the duty and opportunity of anthropology to provide and share what "cultural tools" it has at hand and to improve and refine these tools and techniques through practical application to concrete problems. We must not forget Warner's great contribution in extending the field of anthropology "to include ourselves" (6, p. v).

A possible approach to the question of the actual "authoritative" aspects of contemporary "white" education would be to employ Chapple's valuable technique of measuring human relations (5). However, as well as a count of the number of originations, I should like to have a means of indicating whether the origination was of a "dominative or integrative" type (1). By "dominative" is meant roughly authoritative or rejective; by "integrative" we mean roughly cooperative and assisting in nature or acceptive. An accurate count could be made in the school situation to see how many originations of a dominative kind the pupil received during the day, how many were integrative, and how many originations the pupil himself made and of which type they were.

By this means we could know "how authoritarian" a particular educational system actually is at a particular time with particular teachers. It is not to be assumed that all teachers are alike in the amount of dominative origination they inflict on the pupils. Shaffer has an important chapter on "Mental Hygiene and Education" which should be read by every educator who is considering problems of interaction in the classroom. As Shaffer points out,

... it must be remembered that teachers are human beings, and, like all others, have their own problems of adjustment . . .

The psychology of adjustment makes clear the relationship between the frustrations of teachers and their typical undesirable classroom habits. Overaggressive behavior and the assertion of mastery are compensatory mechanisms for overcoming an attitude of inferiority . . . The control of children in school offers an exceptional opportunity for compensatory behavior . . .

Principals and supervisors have as great a responsibility for the personalities of teachers as for their methods of instruction. Reprimands and orders are no more effective for a maladjusted teacher than for a maladjusted pupil, but a cordial relationship between teacher and

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supervisor and the making of tactful and psychologically considered suggestions can do much to assist the teacher in working out her own problems. The provision of psychiatric service for teachers . . . can, if skillfully administered, turn some teachers from liabilities into educational assets. Even with the best of facilities for mental health, however, there will remain a few teachers so hopelessly handicapped in personal adjustment that they can be nothing but a menace to their pupils. Since the mental health of a generation of children is more important than is the vocational advantage of one teacher, these individuals must be guided into another occupation for which they may be less poorly adapted.

The teacher of the future must be as much a specialist in mental hygiene as in subject matter or method.

It is of interest to note that the Navaho stutterer from Albuquerque is afraid of the teacher and that two of the cases in our own culture mention having had a "mean" or "nasty" fourth grade teacher at the time stuttering came on or became worse. Also, if, as some clues in our case study might suggest, stuttering tends to become worse or make its appearance in certain classes under certain teachers, the problem of dominative origination on the part of the teacher should be investigated. If the effect on one pupil can cause or aggravate stuttering, it cannot be beneficial for others in the class even though their constitutions or conditioning do not respond with the production of the stuttering symptom.

It is interesting to note here a psychological experiment by Van Riper on "The Effect of Penalty upon Frequency of Stuttering Spasms" (32). A severe electric shock was the "penalty" for the stuttering spasm.

... it was found that there were 99 chances out of 100 that threat of shock per spasm would produce more stuttering than threat of shock regardless of spasms . . .

It is felt that the results of the reported experiment show conclusively that frequency of stuttering spasms is in part, at least, a function of the penalty felt by the stutterer to be attached to them.

The importance of such a finding to therapy is obvious. If one is to decrease the number of stuttering spasms, it is necessary to decrease the penalty attached thereto. Fundamentally, what society penalizes is the interruption to communication and the abnormal manner in which communication is finally achieved.

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Here we may have a partial explanation for the lower incidence of stuttering among the non-literate people we have studied. The penalty for "normal roughnesses" in speech seems to be slight in the non-literate societies as compared with our civilization. Our school setup for the developing child and exacting social and business institutions with elaborate patterns of fixed interaction for the adult provide constant "penalties" for the presence of "roughnesses" or inaccuracies in speech timing. The telephone alone puts the speaker "on the spot" in a way different from what occurs in the less "civilized" cultures.

However, Drs. Alexander H. and Dorothea C. Leighton (15, p. 202) in an article on types of uneasiness and fear among the Navaho demonstrate the fact that the potential feeling of fear of humiliation from inadequate speech performance is nevertheless present among certain of the Navaho. They discuss:

... Threats to social security; that is, any evident danger to a person in his relationship to his fellows . . . One day we asked why a certain man who had a lot to say at home was quiet at meetings and our interpreter said that he was afraid to talk, "afraid he would make a mistake and people would laugh, or talk about it afterward."

This occurrence suggests that if early "punitive" conditioning as to speech situations were more common among the Navaho, it might easily raise the incidence of stuttering.

We seldom stop to consider how one or two children in every hundred might be if they had not been subjected to rapid fire arithmetic drills, recitations, and any number of speech situations in which hesitating or faulty performance would be penalized by disapproval or failure.

Having flayed the school and its "punitive" and rejective tendencies, we shall now turn our attention to the home. As all teachers would agree, "the home is really to blame!" However, our perspective is a cross-cultural one, and it is possible that both the home situation and the school situation are less favorable than those found in the non-literate societies we have considered.

Due to the high percentage of college trained mothers among the parents of stutterers, the adjustment of the educated American mother can bear close scrutiny. The presence of unconscious rejection on the mother's part because of the child's interference with cherished ambitions might be very common in the case of "thwarted" college trained mothers. Maslow and Mittelmann (19, p. 247) point out that in cases of unconscious

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rejection, "the child usually feels that something is wrong, feels threatened, or actually has a conscious feeling of rejection, even though his mother's rejection is not conscious."

Here we can only deal with the problem in a rapid and general way but interviews with mothers of stutterers might provide interesting evidence which could be statistically valid if collected in sufficient numbers. Kluckhohn (14, p. 173) puts his finger on a crucial point when he writes

. . . the existent educational system is hopelessly irresolute on all fronts. It vacillates between training girls to be housewives and career women . . .

This certainly has been the case and it has provided areas of difficulty for both groups although the college trained woman with "career" tendencies probably has experienced the most frustration.

As Dr. Talcott Parsons has expressed it, "You can't take girls seriously all through college and then give them a pat on the head and say, 'Now, run along and don't bother your pretty head about it!'" This just doesn't work; it only leads to frustration and lack of satisfaction in the subordinate role to which the woman is assigned, and from which to gain any feeling of fulfilment she has to don the garb of self-sacrificing "saint-hood"! The effect of these repressed "disappointments" on the atmosphere of the home and the development of the children may be insidious and far-reaching in their effects.

It would seem to me that if the woman could at certain times in her life look forward to a part-time job or chance for concrete achievement in some way which would not cheat the children in their early years or disrupt the aspects of conjugal partnership, this might give her the sense of "use in the world" which her college education has led her to think is the legitimate "fruit" of her training. If, through adroit and compulsory college courses in child psychology and child care, she has been led to feel that her job is also to rear happy and adjusted young citizens, she can allot her time through varying periods of her life with better grace and less wear and tear on herself and her offspring.

The early years of married life can be consciously devoted to child care. The middle years when the children are in school most of the day can offer the opportunity for part-time work in her chosen line, assisting her husband if his work is congenial and the arrangement feasible, or preparation for a work she would like to do when the children have left home. For we must remember that they do leave - in our culture -

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and it may be difficult to jump into a new endeavor when one is lonely and feels "bereft."

In other words, it seems that our college trained mothers do not heed to be liabilities to themselves or their children if they have had workable "expectancies" developed during their educational years with the different departments in their lives receiving due emphasis and importance. A woman should not have to make a choice of marriage or a career any more than a man does; the only thing is that the woman has to recognize that her career will be a different career worked out on a different time schedule.

Also, in passing, it should be mentioned that if mothers should take time out to be mothers, fathers should also allot some time out of each day to being fathers! This is especially true where there are sons in the family. As Linton (17, p. 155) observes:

... A woman can conceivably provide for the physical needs of her children without male assistance, but she cannot train her sons in the special male attitudes and activities necessary to their success as men. We recognize that even in our own society boys brought up by their mothers are at a serious disadvantage.

The problem also arises as to the possible emphasis on the conjugal relationship at the expense of interest dispensed in the children's direction. When parents have many interests, recreations or pursuits in common, these are sometimes undertaken with resultant neglect of the children. This neglect of the children is often unintentional, but in the upper middle, lower upper, and upper upper classes, it is very common.

It is highly conceivable that children who are consciously or unconsciously rejected by their parents might develop such feelings of insecurity and anxiety that they would be less able to withstand the added rejections and threatening situations in the school environment, and be more apt to develop stuttering when put into a "punitive" speech situation.

It is known that rejection can precipitate stuttering in a child. Maslow and Mittelmann (19, pp. 247-249) cite the case of a girl who is rejected by her father. They write:

Eleanor cannot speak to her father without stuttering badly. This enrages the father. She does not stutter when talking to the mother or children . . .

In the Stanford-Binet test Eleanor was very confused. She could not control her attention but talked incoherently

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about anything that came into her mind. She had a pronounced stutter which disappeared during the course of the examination.

Apparently, the effects of rejection in helping to create the stuttering symptoms cannot be overstressed whether the rejective experiences occur within the family or at school. Where both home and school present rejective experiences, the result is cumulative and re-enforcing. In such circumstances we should not be surprised to find evidence of stuttering.

For, while I used to think that the Navaho pattern of slow speech was a determinative factor in the lower incidence of stuttering, it now would appear that the type of interaction is of prime significance.

This is borne out by the fact that among the Polar Eskimo with whom Ekblaw lived continuously for four years, the interaction rate was extremely high. They "chattered together" continuously. The women were always telling each other bits of "news." If the group stopped for lunch, a game was immediately started to use any spare time any of the members might have. However, the type of interaction must be considered. They never punished their children. Neither did they praise them: they accepted them. The Navaho also accept their children and punish them only for a few important reasons. Neither the Navaho nor Polar Eskimo has a high frequency of "punitive" reactions in relation to faulty speech.

In other words, interaction, either fast or slow - plentiful or sparse, without rejection or punitive social disapproval, is not in itself harmful. It appears to be the "type" of interaction that counts. As Maslow and Mittelmann (19, p. 226) point out,

. . . any individual can be a real (even though minute) force which creates maladjustment in others, e.g., by rejecting, hating, humiliating, or scorning others. Or else he can be a real (even though minute) psychotherapeutic force, e.g., by respecting others and being kind, affectionate, loving, and accepting.

This suggests how accurate measurements as to the habitual type of interaction patterns in different cultures may lead us to the inherent values in different social philosophies, may demonstrate mathematically the values of the principles of Scientific Humanism, and may help us to know more about

. . . the limits within which men can be conditioned, and what patterns of social life seem to impose fewest strains

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upon the individual (17, p. 5).

CHART 24. CASES - STUTTERERS; CONTROL GROUP A - WELL ADJUSTED; CONT.

CASES	AGE	SEX	HEM- ISPH- ERICAL DOMI- NANCY	SOCIAL- PERSONALITY	PHYSICAL		PHYSICAL- SERVING		SOCIAL- PERSONALITY		INSTITUTION		
					STUTTERING	TRAILING	PHYSICAL	PHYSICAL- SERVING	MENTAL	MENTAL	MENTAL	MENTAL	
WWD	10	28	M	BML	AAARRRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
GAC	10	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
JG	10	28	M	BSL	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
WAC	10	28	M	ASA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
CDE	10	28	M	BML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
HE	10	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
SYG	10	28	M	ASA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
FN	10	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
TR	10	28	M	AML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
PL	10	28	M	ALA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
WRL	17	28	M	AMA	ADARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
LSH	10	28	M	BML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
CDW	10	28	M	BSL	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
DJS	10	28	M	ASA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
GCS	10	28	M	AML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
PT	10	28	M	ACHL	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
GROUP A													
BS	15	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
CIS	15	28	M	ALA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
CIS	15	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C21	15	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C25	15	28	M	ALA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C45	15	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C52	15	28	M	ALA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C81	14	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C78	14	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C115	14	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
GROUP B													
B24	16	28	M	SLL	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
CI	18	28	M	ASA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C5	16	28	M	BML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C7	15	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C18	15	28	M	AMA	ACARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C27	15	28	M	BML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C48	15	28	M	SLL	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C62	15	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C84	16	28	M	BML	ACARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C78	16	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
GROUP C													
B22	16	28	M	AML	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
B29	16	28	M	CML	AAARYYRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
B48	16	28	M	BML	AAARYYRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C6	18	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C92	16	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C99	15	28	M	CAL	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C96	16	28	M	AMA	AAARRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C92	16	28	M	ACHL	AAARYYTYC	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C110	16	28	M	ASA	ACARYYRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR
C118	16	28	M	BML	ACARRYRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR	RRRRRR

GROUP B - MEDIUM ADJUSTMENT; CONTROL GROUP C - POORLY ADJUSTED

CHART 15. CANADA - RESPONSES TO INTERVIEW QUESTIONS

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REFERENCES

- (1) Anderson, Harold H. Domination and social integration in the behavior of kindergarten children and teachers. *Genet. Psychol. Monog.*, 1939, 21, 291-295.
- (2) Bailey, Flora L. Navaho motor habits. *Am. Anthropol.*, 1942, 44, 210-234.
- (3) Blanton, Smiley, and Blanton, Margaret Gray. For stutterers. New York and London, D. Appleton-Century Company, 1936. Pp. xi, 191.
- (4) Burt, Cyril. The backward child. New York, D. Appleton-Century Company, 1937. Pp. xx, 694.
- (5) Chapple, Eliot D., and Arensberg, C. M. Measuring human relations. An introduction to the study of the interactions of individuals. *Genet. Psychol. Monog.*, 1940, 22, 3-147.
- (6) Chapple, Eliot D., and Coon, Carleton S. Principles of anthropology. New York, Henry Holt and Company, 1942. Pp. xi, 718.
- (7) Elder, Dorothy. Navaho land. *Santa Fe, Region III Quart.*, National Park Service, 1941, 3 (2). Pp. 26-30.
- (8) Greene, James Sonnett, and Wells, Emilie J. The cause and cure of speech disorders. New York, Macmillan Company, 1927. Pp. xv, 558.
- (9) Greene, James Sonnett. Treatment of the stutter-type personality in a medical-social clinic. *J. Am. Med. Assoc.*, 1935, 104, 2239-2242; *J. Nerv. Ment. Dis.*, 1935, 81, 313-317.
- (10) Greene, James Sonnett. The stutter-type personality and stuttering. *New York St. J. Med.*, 1936, 36, 757-765.
- (11) Henry, Jules, and Henry, Zunia. Speech disturbances in Pilagá Indian children. *Am. J. Orthopsychiat.*, 1940, 10, 362-370.
- (12) Horney, Karen. The neurotic personality of our time. New York, W. W. Norton and Company, 1937. Pp. 299.
- (13) Kluckhohn, Clyde, and Spencer, Katherine. A bibliography of the Navaho Indians. New York, J. J. Augustin, 1940. Pp. xiv, 93.
- (14) Kluckhohn, Clyde. The way of life. *The Kenyon Review*, 1941, 160-179.
- (15) Leighton, Alexander H., and Leighton, Dorothea. Some types of uneasiness and fear in a Navaho Indian community. *Am. Anthropol.*, 1942, 44, 194-209.
- (16) Lewin, Kurt. A dynamic theory of personality. New York and London, McGraw-Hill Book Company, 1935. Pp. ix, 286.
- (17) Linton, Ralph. The study of man; an introduction. New

CHILD DEVELOPMENT

York and London, D. Appleton-Century Company, 1936. Pp. viii, 503.

(18) Lowie, Robert H. *The history of ethnological theory*. New York, Farrar and Rinehart, 1937. Pp. xiii, 296.

(19) Maslow, A. H., and Mittelmann, Bela. *Principles of abnormal psychology: The dynamics of psychic illness*. New York and London, Harper and Brothers, 1941. Pp. x, 638.

(20) Mead, Margaret. *Coming of age in Samoa; a psychological study of primitive youth for western civilization*. New York, W. Morrow and Company, 1938. Pp. xv, 297.

(21) Mead, Margaret. *Growing up in New Guinea; a comparative study of primitive education*. New York, W. Morrow and Company, 1930. Pp. x, 372.

(22) Mead, Margaret. *Sex and temperament in three primitive societies*. New York, W. Morrow and Company, 1935. Pp. xxii, 335.

(23) Mead, Margaret. *From the South Seas; studies of adolescence and sex in primitive societies*. New York, W. Morrow and Company, 1939. (3 v. in 1 - see References 20, 21 and 22.)

(24) National Hospital for Speech Disorders. *A challenge*. Talk, July, 1939, Vol. 20. Pp. 9.

(25) O'Neill, John J. *Stutter-type personality traced to inherited state of nervous system*. Talk, November, 1939. Pp. 7.

(26) Rogers, Carl R. *The clinical treatment of the problem child*. Boston, Houghton Mifflin Company, 1939. Pp. 393.

(27) Rogers, Carl R. *Counseling and psychotherapy; newer concepts in practice*. Boston, Houghton Mifflin Company, 1942. Pp. xiv, 450.

(28) Sanford, Fillmore H. *Speech and personality: A comparative case study*. *Character and Personality*, 1942, 10, 169-198.

(29) Sanford, Fillmore H. *Speech and personality*. *Psychol. Bull.*, 1942, 10, 811-845.

(30) Sapir, Edward. *Speech as a personality trait*. *Am. J. Sociol.*, 1927, 32, 892-905.

(31) Shaffer, Laurance F. *The psychology of adjustment; an objective approach to mental hygiene*. Boston, Houghton Mifflin Company, 1936. Pp. xix, 600.

(32) Van Riper, C. *The effect of penalty upon frequency of stuttering spasms*. *Pedagog. Sem.*, 1937, 50, 193-195.

(33) Woods, William L., Brouha, Lucien, and Seltzer, Carl C. *Selection of officer candidates. (Harvard University Studies in the relation of personality to field of work.)* Cambridge, Harvard University Press, 1943. Pp. xii, 46.

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The insights and suggestions of these people, as well as others, have helped the writer to the present stage of approach to the problem; however, for the interpretation and emphasis in the present paper the writer wishes to accept full responsibility for error and for misinterpretation or possible minimizing of certain important areas of the problem with which the writer is less familiar. It is hoped that the present data

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are presented in such a way that others may be inclined to make their own interpretation of and add to the data whenever possible so that by cooperation and cross-fertilization of ideas a balanced interpretation may be the end result.

CHILDREN'S EMOTIONAL RESPONSES TO HEALTH EXAMINATIONS¹

MARY M. SHIRLEY
and
LILLIAN POYNTZ

Adequate health care for infants and young children involves the application of techniques that often are emotionally upsetting both to the child and to his mother. Such upsets prove handicapping to the doctor and nurse that are giving the medical care. For some children repetition of the medical examination tends to reduce its emotion provoking connotation; for others it enhances it. Despite such wide individual differences, it is important to ascertain whether any age and sex trends exist in emotional responses to health care. Specifically we may inquire at what ages children are most likely to be upset by medical examinations? How do they progress in emotional control with age? How do they express their upsets at different ages? In what way do boys and girls differ in the frequency and type of emotional responses?

Source of the observations: The material comes from observation of children's emotional responses to a series of examinations made at six month intervals on approximately 250 children enrolled in a growth study.² The children have been subjected to a fairly consistent program of physical examinations, anthropometric measurements and orthopedic ratings, x-rays and still photographs, dental examination, and psychological observations from birth onward. From the beginning the various examiners took notice of the child's emotional reactions and bent their efforts toward preventing upsets. Nevertheless many children found the techniques to which they were subjected disquieting. Reports on each child's behavior during his examination were obtained from the various examiners at the end of the day at the Center.

This paper is based upon analysis of 572 records made on 184 children, 92 boys and 92 girls. Distribution of the records by age levels is given in Table 1.

¹Based on data collected at the Center for Research in Child Health and Development, Harvard School of Public Health, Harold C. Stuart, Director. The study was financed by a grant from the General Education Board.

²The general conditions of this study have been described by Harold C. Stuart and Staff (see Reference 9).

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TABLE 1. AGE AND SEX DISTRIBUTION

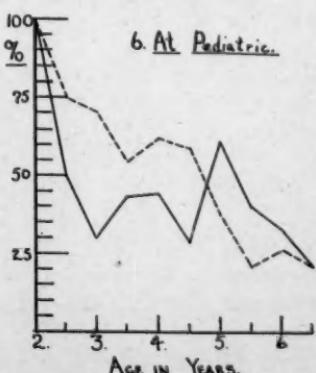
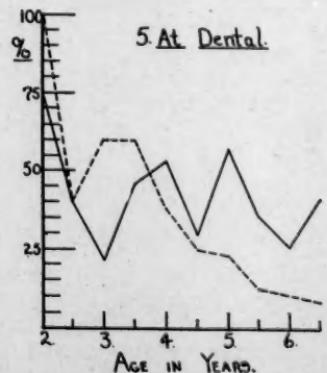
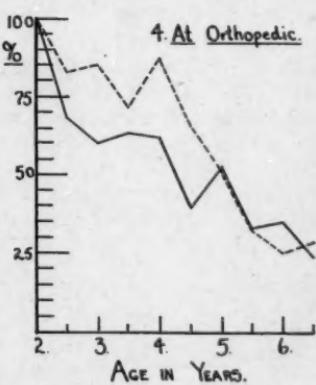
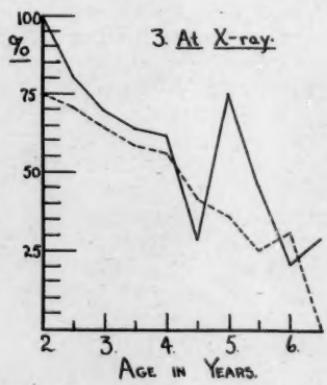
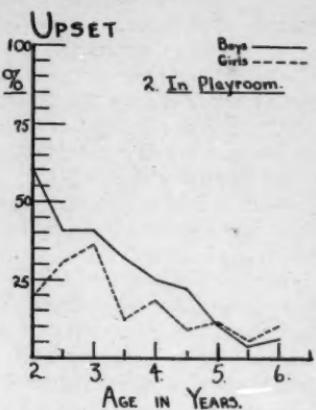
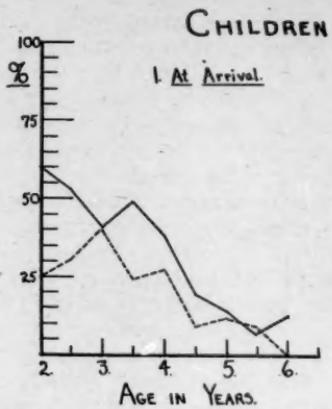
Age in Years	Boys	Girls	Total
2	10	10	20
2 1/2	19	22	41
3	27	30	57
3 1/2	27	31	58
4	31	28	59
4 1/2	42	31	73
5	35	36	71
5 1/2	38	38	76
6	29	32	61
6 1/2	16	19	35
7	7	14	21
Total	281	291	572

Age Trends in Childrens' Upsets at Examinations

Under the conditions described, behavioral indications of upsets did occur. At all ages up to 6 1/2 years, beyond which age the records have not been tabulated, some children cried, some protested verbally, some actively resisted, and some tensed and tried to withdraw; some, of course, expressed emotion in all those ways at the same examination. All such behavior was considered to indicate some degree of emotional upset on the child's part, and a child manifesting any of these responses at any time during an examination, whether he continued it throughout or not, was classified as being upset.

Developmental trends in the frequency of upsets at different types of examinations are shown in Figures 1, 2, 3, 4, 5, and 6. It is unfortunate that no records were available at ages younger than two years. It is the impression of the examiners, however, that 18 months was the age at which the children were most difficult to examine. During the early months, 3, 6, and 9 months, the babies often cried and squirmed but their efforts at resistance were not very effective. Even at 12 months they were able to do little more than roll and slash with their arms. At 18 months, however, all were able to run about, and it was then that lying on a table was a most frustrating experience, to be resisted with every ounce of fight the baby could muster. From two years on the number of emotional upsets declined with age. The frequency of emotional upsets at examinations was higher than that at arrival or during the play period (8). Comparison with figures on the proportion of "easily upset"

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children that are found in Federal Nursery School groups indicates that the proportion of children upset by examinations at the Center was no greater than that occasioned by preschool education programs (3).

The different types of examinations differed somewhat from one another in the percentage of upsets they provoked. The dental examination, which occurred when the child was fully dressed and which lasted only fifteen minutes, appeared to be the least upsetting. Differences among the other examinations were not striking.

Sex differences in the proportion of children upset were of about the same magnitude as for upsets at arrival and in the playroom, but they were not always in the same direction. Whereas boys quite consistently were more upset than girls upon arrival and during play periods and at meals, girls had a higher proportion of upsets during examinations at almost every age level. Although this sex difference is slight and not too well established by the evidence on the rather limited number of cases that were tabulated, still there are logical interpretations of it that are worth while considering. Whereas boys are less mature physically and emotionally than girls, age for age, and hence feel a greater insecurity in the absence of the mother during the routine features of the day, they have from earliest childhood a wider range of interests and a higher degree of curiosity, a trait that gives them more intellectual satisfaction in examining the apparatus and watching the techniques of the examining situation (6). Furthermore, the approved culture pattern inculcates into boys earlier and more systematically than into girls that crying in the face of fear or danger is a sign of weakness. If a boy cries when hurt he is a "sissy"; if a girl cries, it is her prerogative and privilege because of her femininity. Schooling in modesty and prudish standards of what is "nice" and "not nice" are less firmly imposed on boys; hence boys have less conflict over the exposure of their bodies to the view and comments of adults. Both these cultural impacts would tend to make boys cry less than girls at examinations; but neither their higher curiosity nor their greater warnings against the unmanliness of cowardice makes up for their greater physiological immaturity and its accompanying need for maternal care; hence they do not tend to inhibit boys from crying at parting from their mothers more frequently than girls do.

Ways of Expressing Upsets and Ways of Handling Them

As in other studies of emotional expression in young chil-

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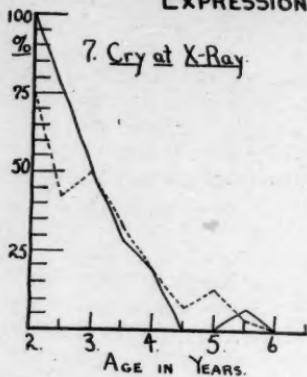
dren (1, 2, 4), so it was found in this that both vocal and muscular expression of emotion progressed from the non-specific and non-adaptive to the highly specific and well-adaptive response - from screaming and slashing and kicking in random fashion in infancy to specific acts of avoidance, protection, or withdrawal and to well-worded protests. The height of specificity both in motor and verbal forms of resistance seemed to occur in the late preschool years; thereafter there was a gradual return to the generalized muscle tension and to the non-adaptive and all but involuntary outcry "Ouch" (7). This change from highly specific and adaptive resistance to non-specific and non-adaptive was not so much a reversion to an infantile level of behavior as a progress toward the adult-like divorce of cortical and thalamic processes, toward intellectual recognition that no real danger was involved, and toward the acceptance of the adult code of spartan acceptance of minor discomfort that our culture pattern imposes upon children early and often.

Some evidence of the timing of this developmental trend from non-adaptive to adaptive and back to non-adaptive response is to be seen in the six charts, Figures 7, 8, 9, 10, 11, and 12. Charts for two different types of examinations, the x-ray and orthopedic routines, and presented side by side to show how consistently a given type of behavior was manifested even though the types of examinations differed. The similarity of the curves for the different examinations offer convincing evidence as to the reliability of the material. Crying, (Figures 7, 8) the least adaptive type of vocal response, was almost universal for both boys and girls of this study up to two years; it had almost ceased to occur at 4 1/2 years. Making a verbal protest was a common response at all ages, (Figures 9, 10) and continued to be used in one form or another even at 8 years. Specific protests, however, seldom appeared before three years; the earlier protests were merely calls for Mama or Daddy (7). Non-specific fighting and jerking away were common in babyhood, but tensing in anticipation and resistance that was directed toward the examiner or the situation gradually increased from 2 to 4 or 5 years, and then again declined (Figures 11, 12). In using specific verbal protests and in the development of tension and resistance girls appeared to be about six months ahead of boys, a fact that is compatible with girls' lead over boys in all aspects of maturation up to puberty.

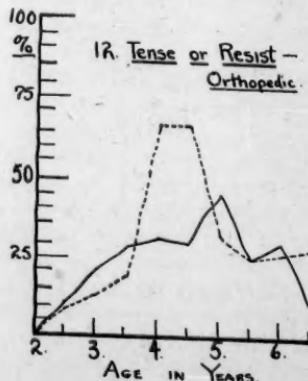
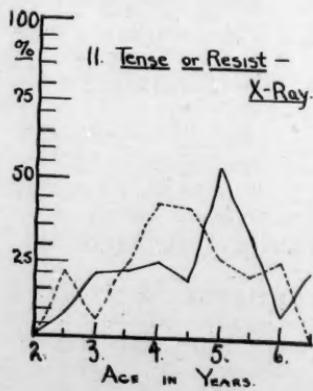
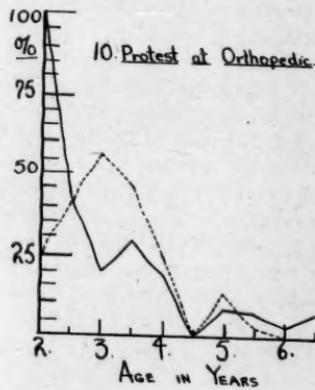
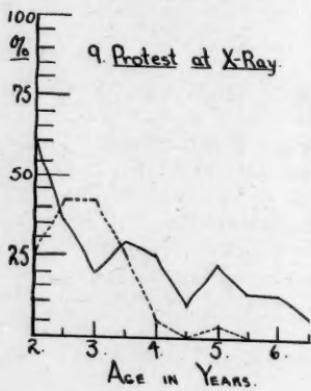
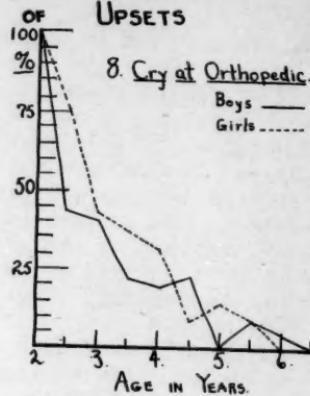
Emotional responses to health examinations not only show developmental trends that indicate the influence of maturational processes in self control, but they also reflect the influence of cultural standards on children's attainment of emotional fortitude.

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EXPRESSION



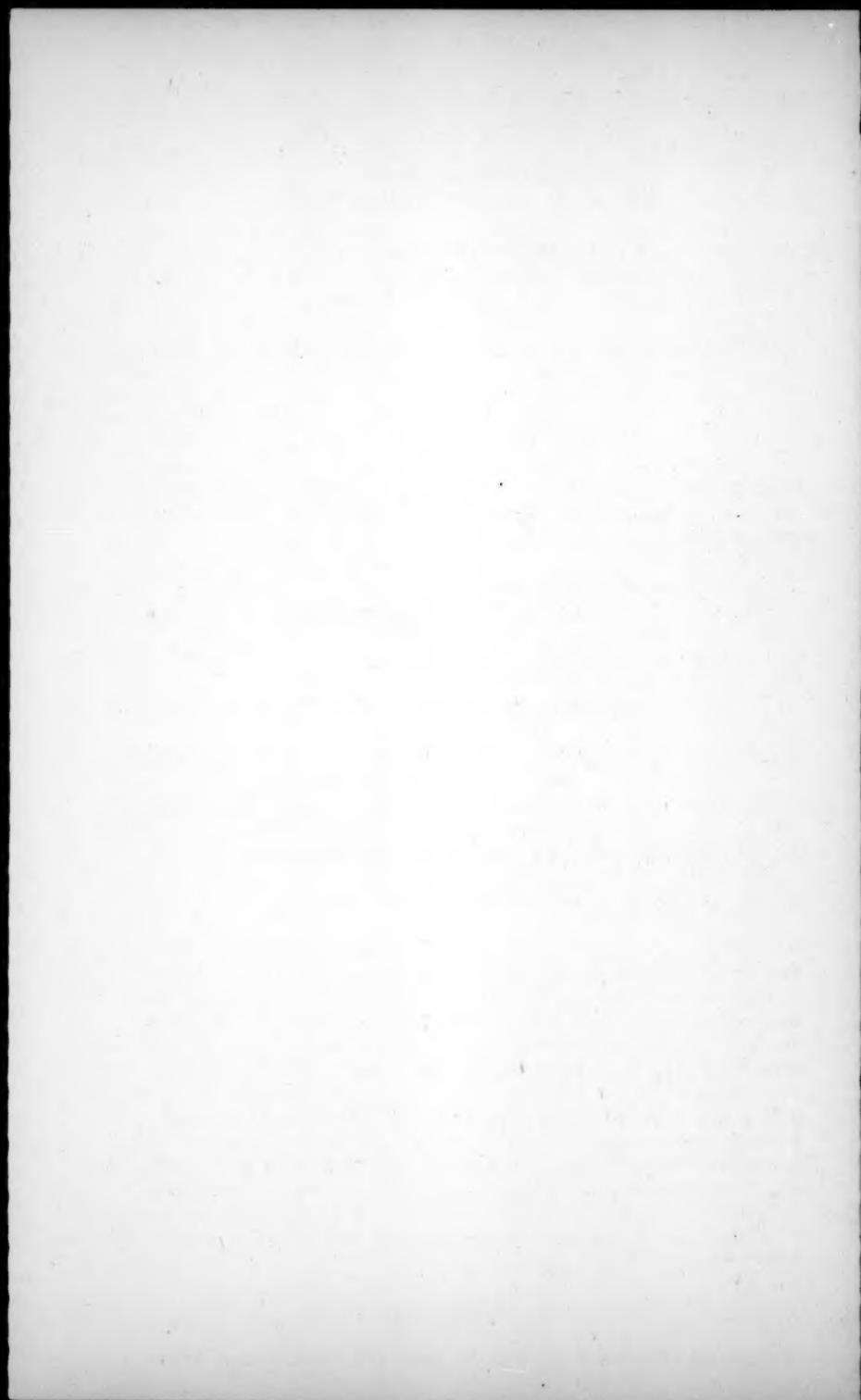
UPSETS



M. M. SHIRLEY and L. POYNTZ

REFERENCES

- (1) Dawe, Helen C. An analysis of two hundred quarrels of preschool children. *Child Develop.*, 1934, 5, 139-157.
- (2) Goodenough, Florence L. *Anger in young children*. Minneapolis, University of Minnesota Press, 1931. Pp. xiii, 278.
- (3) Hattwick, LaBerta A., and Sanders, Mollie Krom. Age differences in behavior at the nursery school level. *Child Develop.*, 1938, 9, 27-47.
- (4) Jersild, A. T., and Markey, F. V. Conflicts between preschool children. *Child Develop. Monog.*, 1935, No. 21. Pp. ix, 181.
- (5) McCarthy, Dorothea A. The language development of the preschool child. Minneapolis, University of Minnesota Press, 1930. Pp. xiii, 174.
- (6) Probst, Cathryn A. A general information test for kindergarten children. *Child Develop.*, 1931, 2, 81-95.
- (7) Shirley, Mary, and Poyntz, Lillian. Development and cultural patterning in children's protests. *Child Develop.*, 1941, 12, 347-350.
- (8) Shirley, Mary, and Poyntz, Lillian. The influence of separation from the mother on children's emotional responses. *J. Psychol.*, 1941, 12, 251-282.
- (9) Stuart, Harold C., and Staff. Studies from The Center for Research in Child Health and Development, School of Public Health, Harvard University. I. The Center, the group under observation, sources of information, and studies in progress. *Monog. Soc. Res. Ch. Develop.*, 1939, IV, No. 1, Ser. No. 20. Pp. xiv, 261.



MUSCULAR ACTIVITY AN AID IN CONCEPT FORMATION

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It is the purpose of this study to present a summary of an investigation concerning the influence of muscular activity upon the formation of concepts.

Historical Survey

George Kerchensteiner collected several thousand drawings from children of various ages and from a careful study of these he drew the conclusion that the development of drawings progressed as follows:

1. A meaningless scribble.
2. A scribble which the child happened to call a certain object.
3. An unrecognizable design which became symbolized as an object.
4. A mixed scribble and schema which has partly a resemblance.
5. A pattern having parts of a man but not a formalized schema.
6. A schema having some of the essentials of a man-head.
7. A formalized schema having major parts of the man.
8. Schema with limbs showing through the clothing.
9. Complete representation, profile.
10. Portrayal in three dimensions (5).

Clark, in his studies of the apple with the hat-pin, found that children of 6 years and under demanded that the total part of the pin show all the way through the apple as the pin did go through it; it was not two pieces of pin sticking into the apple but a whole pin going through the apple. Above 9 years and even beginning at 8 the children were more given to realistic representation (2). Rouma found the same obstinacy on the part of this younger group to portray what they knew to be there; he says that when he would stop them and ask them to look at the object they seemed to be annoyed and would only give it the required observation or glance and then continue drawing the

¹The author wishes to acknowledge her appreciation to Mary McFarlane for her aid.

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pin all the way through the apple in that study (11) and in drawing the box in the other study (12). Kerschensteiner (5), Luquet (6) and Eng (3) all bring out the fact that the child will draw the legs of the man and then put on the pants, coat or dress and, if drawing a house, will show the objects in the house - "For there is a table" - "There are chairs." O'Shea (9), Passy (10) and others tried posing in different positions and found the above facts to be true. Thus it is that at 6 years of age and under the writers received "knowledge" pictures, while over 8 years they gained more and more the realistic drawings. Bühler maintains that it is this knowledge which makes the child draw: two arms, two legs but only one nose (1).

It has been found by Kerschensteiner (5), Sully (13), O'Shea (9) and Maitland (8) that children over 9 years draw the human being more often in profile than front view; likewise that children under 9 tend to draw the front view. It is the younger age children 6 and under who draw what they know. When a child of this younger age makes a profile drawing he puts in the nose and mouth then places two eyes on that side of the head. This factor is brought out strongly by Luquet (6) and Eng (3) in their studies of individual cases in which they heard the child say: "No she has two eyes, she has two ears I will put them both here."

Thus, according to Clark (2) and Rouma (11), children under 6 years pay no attention to the object which is placed before them; they are primarily interested in drawing it as they know it to be. In spite of the object posing before them, O'Shea and Passy found that children drew it as they knew it to be; in other words, the sight of the object did not influence their drawing. This writer has on occasions called the attention of the children to a drawing made on the board then asked them to draw it, only to receive the same discouraging results as those mentioned by the above authors. Last year the group was asked to draw the man part by part as it was drawn on the board before them. The drawing was then erased, the children given a second sheet of paper and told to draw the same man. This brought results which prompted the undertaking of this study with a new group of children.

The Procedure

The drawings studied the first part of this investigation were made by 24 American children. One child moved to Florida to be near his father in camp, another was ill, otherwise the group remained the same for the second part. They were attending kindergarten and nursery at Southern Illinois

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Normal University and their ages ranged from 51 months to 72 months.

The first set of the first group of drawings was made on the Tuesday following New Year's day. Each day for ten successive school days the children drew the two drawings. There followed then a period of six weeks in which the subject was completely dropped, no drawings were called for and no instructions given, then drawings were again made for five successive school days.

Each child was provided with a large pencil and an unlined paper size 9x9 inches, their initials and the date having been placed in the upper right hand corner. They were so seated that they would not see each other's drawings and would not be tempted to talk. They were told: "Today we are going to draw a picture of a man. You may draw the picture of your daddy. Draw the very best picture of him that you can." They were given all the time they desired, which ran from five to ten minutes.

After this drawing was completed the papers were turned over and the pencils were placed on the sheet. The children then stood and after listening carefully followed the teacher in the suggested activity.

The first day the teacher said: "This is my head, I nod it," (every one repeated the words then nodded). "Now you may draw another picture of a man. Think about each part and put it in the picture."

The same procedure was followed the second day, to "This is my head I nod it," was added "This is my stomach I rub it." Repeating the sentence they nodded their heads and rubbed their stomachs in a circular fashion. Table 1 gives the sentences and their accompanying activities. The interest on the part of the children was maintained through the fun in doing these accompanying activities.

Each day's drawings were clipped together. At the end of the ten days they were taken out to score. Inasmuch as the problem was that of investigating the influence of muscular activity on the formation of concepts, the artistic qualities of the pictures were entirely disregarded. This study is primarily interested in the drawing of those additional parts of the body listed in Table 1. The scale best suited in determining this was developed by Goodenough (4, pp. 14-45 and 85-160). It is understood that this investigation does not concern itself with the development of intelligence as measured by the drawings but the growth of the concept as shown by the increase in the items added to the drawing.

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TABLE 1

THE STATEMENT AND ITS ACCOMPANYING ACTIVITY WHICH EACH DAY PRECEDED THE SECOND DRAWING

Day	Statement	Activity
1.	This is my head, I nod it.	Nod head.
2.	This is my stomach, I rub it.	Rub stomach.
3.	These are our arms, we swing them.	Swing arms.
4.	These are our legs, we jump.	Jump.
5.	These are our fingers, we wiggle them.	Wiggle fingers.
6.	These are our toes, we wiggle them.	Wiggle toes.
7.	This is my hair, I pull it.	Pull hair.
8.	These are our eyes, we blink them.	Blink eyes.
9.	This is my nose, I wiggle it.	Wiggle nose.
10.	This is my mouth, I open it.	Open and close mouth.
After Six Weeks		
11.	These are our ears, we wiggle them.	Wiggle ears.
12.	These are our eye brows, we raise them.	Raise eye brows.
13.	This is my neck, I turn it.	Turn neck.
14.	These are my shoulders, I shrug them.	Shrug shoulders.
15.	This is my tongue, I stick it out.	Stick out tongue.

There are 51 points in the Goodenough Scale; aside from points for each item as head, trunk, arm, legs etc., there are additional points for "5a. Attachment of arms and legs." "9e. Costume complete without incongruities." "16a. Eye in detail. Brow, lashes, or both shown." If the child portrayed simply those items listed in Table 1 he would, according to the Goodenough Scale, receive a raw score of 15. Should he draw these in detail or have them in proportion, there would be additional points and therefore a higher score.

The drawings were scored by two individuals. Where there appeared a difference in score a re-check was made. The scores were then tabulated on a large work sheet.

The Findings

The findings were divided into two parts, the one dealing with the statistical findings, and the other a more detailed study

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TABLE 2

STUDY OF SCORES ON THE DRAWING OF A MAN

Pupil	C.A.	First	Last	Median	Highest	Increase
J.M.	72	13	14	14	16	3
S.S.	70	10	11	11	12	2
S.T.	69	10	12	11	12	2
L.B.	68	8	11	12	14	6
D.L.	67	9	11	11	12	3
L.C.	66	3	7	8	9	6
L.F.	65	8	11	9	13	5
M.R.	65	8	10	10	11	3
P.W.	65	11	10	9	14	3
J.O.	64	4	10	8	11	7
F.H.	64	11	13	12	14	3
M.H.	62	11	12	11	13	2
S.H.	62	5	8	7	9	4
V.L.	62	7	13	11	14	7
F.S.	61	6	10	9	11	5
A.L.	59	7	10	7	10	3
M.G.	58	1	6	6	10	9
M.S.	54	2	6	5	6	4
W.P.	54	3	8	5	8	5
J.C.	52	2	6	6	12	10
T.W.	52	0	1	4	7	7
W.M.	51	4	3	4	7	3
C.T.	51	4	5	5	7	3
S.T.	51	2	3	2	5	3

Col. 1, initials of the various pupils. Col. 2, chronological age expressed in months. Col. 3, the scores on the first drawing of the man. Col. 4, the scores on the last drawing taken up on the tenth day. Col. 5, the median score. Col. 6, the highest score made by each child. Col. 7, the difference between the highest score and that made on the first drawing.

of a few of the individual drawings.

Of the 24 children taking part in this study 19 had all 20 drawings and the other 5 had enough to warrant their being included. Of the 24 half did not at any time go below the score on their first drawing. Only 9 of the remaining 12 dropped from one to four times below the original score. Of these times the drawings showed that the children had become so interested in portraying some idea that they had forgotten the drawing of

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the man as a whole.

From the work sheet containing the scores on the drawings in the first part, there are to be found in Table 2, Column 1, initials; Column 2, chronological age expressed in months; Column 3, scores on the first drawings; Column 4, scores on the last drawing; Column 5, the median score; Column 6, the highest score; and Column 7, the difference between the highest and the first scores which in each instance was an increase. It will be noted that the children are listed according to their chronological age: 51 to 72 months. The scores on the first drawings, running from zero to 13, show some correlation to the chronological age, yet one of the youngest received a score greater than that of the sixth from the oldest. There is a difference in age of 20 months while the difference in scores is 13 points. Yet these 13 points represent the portrayal of the various parts of the man (head, eyes, eye brow, nose, mouth, hair, neck, trunk, arms, legs, fingers, feet and pants). That is, J.M.'s first drawing included most of the items listed in Table 1, while T.W.'s drawing was a meaningless scribble. The median score on these first drawings is 6, which shows that the majority of the drawings were incomplete and quite immature.

The fourth column in Table 2 contains the scores on the last drawing taken up on the tenth day - the twentieth drawing. These scores range from one to 14, which is only one point above the scores for the first drawing. From this it would at first glance appear that little had been gained, yet the median of these scores was raised from 6 to 10 points.

It was regrettable that the study began on a Tuesday and ended on a Monday as each Monday's scores tended to be lower than the preceding Friday's. For this reason the sixth column contains the highest scores. They range from 5 to 16 with a median of 11 or 5 above the median on the first scores.

In order to gain a relative idea of the progress of each child the median for the 20 drawings was determined and these are recorded in the fifth column. The median of these medians falls between 8 and 9, showing a slow but steady progress.

The difference between the scores made on the highest and the first is to be found in Column 7. In every case there is an increase; this runs from 2 to 10 with an average of 4 1/2.

Turning to the second set of drawings (Table 3) it will be noted that the scores on the first set of drawings range from 3 to 14. Comparing these scores with the scores made on the last drawing on the first set, it will be found that half the scores are one to 5 points lower than the scores made on the last drawing in the first set and that only 5 of the 22 raised them from one to 3 points. Furthermore, the median of these draw-

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TABLE 3

STUDY OF THE SCORES ON THE DRAWING OF THE MAN
Second Set

Pupil	C.A.	First	Last	Median	Increase	Increase
J.M.	72	14	16	16	2	3
S.T.	69	11	17	13	6	3
L.B.	68	11	16	16	5	8
D.L.	67	10	13	12	3	4
L.C.	66	8	12	11	4	9
L.F.	65	11	13	13	2	5
M.R.	65	11	15	12	4	7
P.W.	65	9	12	11	3	1
J.O.	64	11	13	12	2	9
F.H.	64	12	13	12	1	2
M.H.	62	7	12	11	5	1
S.H.	62	8	10	9	2	5
V.L.	62	12	14	13	2	7
F.S.	61	8	12	10	2	6
A.L.	59	9	10	9	1	3
M.S.	54	5	7	5	2	5
W.P.	54	4	7	6	3	4
J.C.	52	3	11	9	8	9
T.W.	52	3	5	7	2	5
W.M.	51	3	9	6	6	4
C.T.	51	5	7	6	2	3
S.T.	51	6	9	6	3	7

Col. 1, initials of the various pupils. Col. 2, chronological age expressed in months. Col. 3, scores on the first drawing in this set. Col. 4, scores on the last drawing - the thirtieth. Col. 5, the median. Col. 6, the difference between the last scores and the first on the drawings of the second set. Col. 7, the difference between the scores on the last drawing of the second set and the first of the first set.

ings' scores has dropped back to the median of the medians in the first set. Comparing the scores on the first drawings of both sets it will be noted that all are higher but 3. While the median shows a loss of 3 points over the last drawing, they show a gain of 3 points over the median of the scores on the first drawings.

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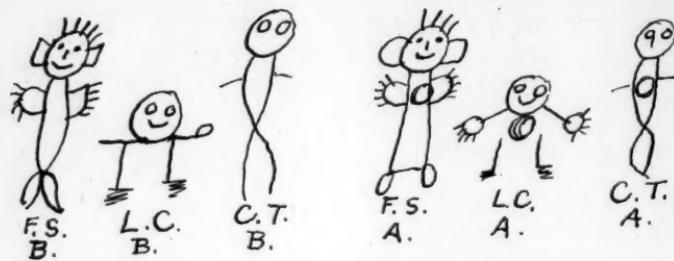


Figure 1. "This is my stomach, I will rub it."

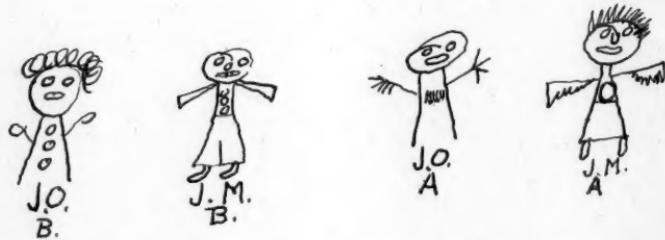


Figure 2. "These are my fingers, I will wiggle them."

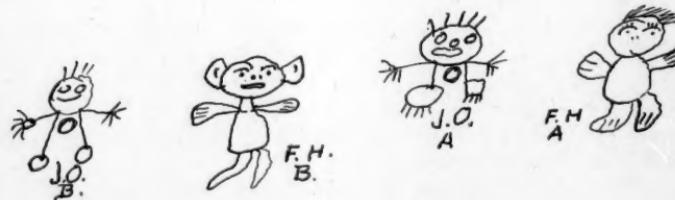


Figure 3. "These are my toes, I will wiggle them."

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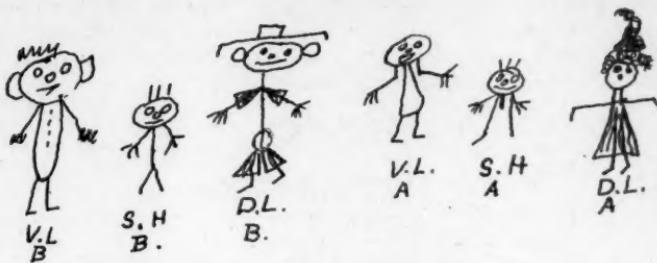


Figure 4. "This is my neck, I turn it."

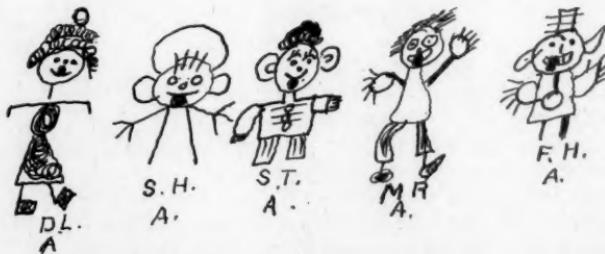


Figure 5. "This is my tongue, I stick it out."

Inasmuch as this second study ran for only five school days from Monday through Friday, the last of the 10 drawings were made in the same week as the first. Here the scores range from 5 to 17 with a median of 12 - twice that made on the first drawings of the first part. It is also one higher than that made on the highest in the first study.

The median of the individual drawings is presented in Column 5, Table 3, and it is to be noted that they fall nearer the score on the last drawing than the score on the first drawing. Studying the medians in Table 4 it is noted that the group progressed from 6 to 12; that when they are not drawing for a period of time they fall back; yet upon renewing the study they quickly regain the loss and continue to progress.

Column 7 of Table 3 contains the difference between the scores made on the first drawing and the last drawing of the

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second part. In each case there is an increase which ranges from one to 8 with an average of 3.2. The average increase for the first two weeks was 4.5, for the third week it was 3.2, and for the combined three weeks it was 5.

TABLE 4
STUDY OF THE MEDIAN

Study	First	Median	Last
I	6	8	11
II	8	11	12

It is of interest to note the direct influence of muscular activity in the study of the individual drawings. A few Before (B) and After (A) drawings will illustrate the point. Before we had "This is my stomach, I will rub it," 59 per cent of the drawings contained the trunk - stomach as the children preferred to call it. After this activity there were 89 per cent (see Figure 1) which contained the stomach.

Before they said, "These are my fingers, I will wiggle them," there were 29 per cent who portrayed fingers; after this there were 70 per cent (see Figure 2).

Before they said, "These are my toes, I will wiggle them," 37 per cent contained feet or shoes. After this activity there were only 2 per cent who indicated any toes (see Figure 3), but the number who indicated feet or shoes rose to 78 per cent. The question arises, did the fact that they could not wiggle their toes well in their shoes merely draw their attention to the shoes?

Before they said, "This is my neck, I turn it," there were 5 per cent of the drawings which portrayed the neck. Following this activity there were 52 per cent which contained attempts as shown in Figure 4.

Although a few had portrayed teeth there were none who had drawn a tongue up to the last drawing. There were 21 present that day and they thoroughly enjoyed sticking out their tongues at each other. Even the rest of the man seemed to portray the happy attitude of the children (see Figure 5). In all there were 12 such drawings which showed the tongue stuck out of the mouth, either up or down.

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Summary and Conclusion

Previous studies have shown that children 6 years and under draw "knowledge" rather than realistic pictures. The presence of objects tends to annoy them rather than inspire or suggest.

This study was undertaken with 24 American children between the ages of 51 and 72 months. For ten successive school days they drew two pictures. Having drawn the first they turned over the paper and after listening to the teacher say, "This is my head, I nod it," they repeated the words and nodded their heads. They then drew a second picture on the back of the first. Each day in "This is the house that Jack built," style there was suggested another part of the human body by its accompanying activity. At the end of the two weeks the matter was dropped, no drawing of the man was made, no reference to the study was given. After six weeks the study was then continued for five successive school days. The Good-enough Scale was used in scoring the drawings.

The scores were tabulated on a large work sheet from which the scores on the first, last, best, together with the medians and the amounts of increase have been taken for Tables 2 and 3. A study of these findings shows:

1. During the three weeks of the study every child made a positive increase from one to 10 points. The average for the first two weeks was 4.5, for the third it was 3.2, for the combined three weeks it was 5 points. The median rose from 6 on the first set to 12 on the 30th or last. The median of the medians shows that there was a gradual increase. It is of interest to note that the second median of the medians is nearer the median of the last set of scores than the first. This would indicate that the children were slowing down - their scores were nearing the total number of points to be gained on the items listed in Table 1.

2. During the 6 weeks between the first and second studies most of the children fell back as the scores on the first drawing of the second set dropped one to 5 points below those made on the last of the first study for half of the children. Only 5 of the 22 children raised their scores - one to 3 points. This would indicate that the increase made in the three weeks' study was something more than that which might occur through natural development. The fact

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that the median of the scores on this first drawing of the second set is 3 points below the median of the scores on the last drawing of the first set shows that the children forgot some, but the 3 points above the median of the scores on the first drawing indicates that they retained some.

A study of the pictures drawn before attention was called to that part of the body by the appropriate activity and those drawn after show that there is a positive and direct influence upon those drawings which follow the exercise. The amount ranged from 2 per cent - in the case of the toes - to 47 per cent in the case of the neck.

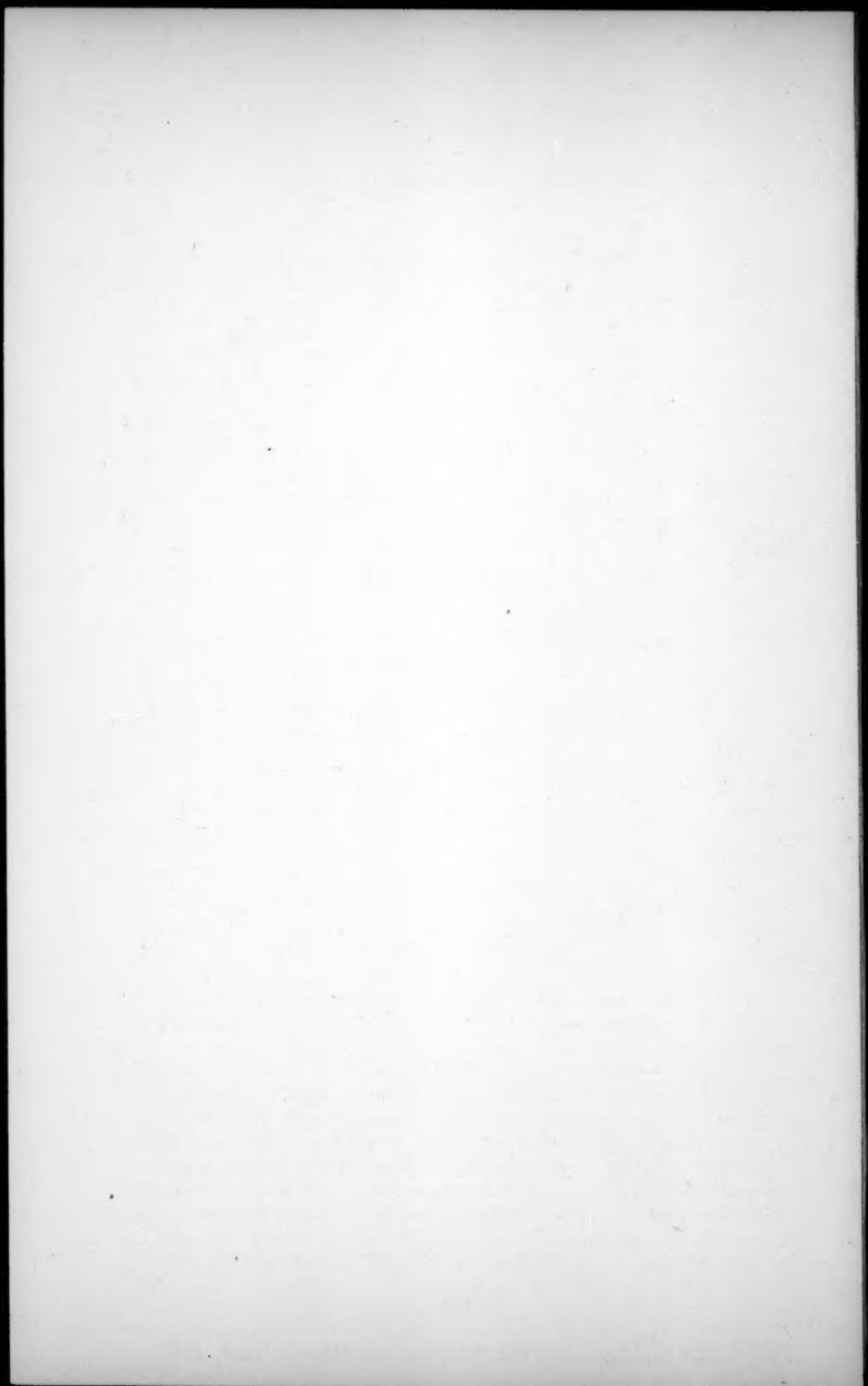
It may be concluded from the above summary of findings that children, 51 to 72 months, learn faster through doing than seeing. In other words, teach this age through his muscles - "put it in through the muscles."

REFERENCES

- (1) Bühler, Karl. *The mental development of the child: A summary of modern psychological theory.* New York, Harcourt Brace, 1930. Pp. xi, 170.
- (2) Clark, A. B. *Child's attitude toward perspective problems.* *Studies in Education* by Barnes, 1902, 1, 283-294.
- (3) Eng, H. *Kinderzeichnen. Vom ersten Strich bis zu den Farbenzeichnungen des Achtjährigen.* Leipzig, Barth, 1927. Pp. v, 198. Also in *Ztschr. f. angew. Psychol.*, 1927, 12, Beiheft 39. Pp. 198.
- (4) Goodenough, F. L. *Measurement of intelligence by drawings.* New York, World Book Company, 1926. Pp. xi, 177.
- (5) Kerschensteiner, G. *Die Entwicklung der zeichnerischen Begabung. Neue Ergebnisse auf Grund neuer Untersuchungen.* München, C. Gerber, 1905. Pp. 508.
- (6) Luquet, G. H. *Les dessins d'un enfant. Etude psychologique.* Paris, Alcan, 1913. Pp. xxvi, 262.
- (7) Luquet, G. H. *La narration graphique chez l'enfant.* *J. de psychol.*, 1924, 21, 183-218.
- (8) Maitland, L. M. *What children draw to please themselves.* *Inland Educ.*, 1895, 1, 77-81.
- (9) O'Shea, M. V. *Mental development and education.* New York, Macmillan, 1921. Pp. 403.
- (10) Passy, J. *Notes sur les dessins de l'enfant.* *Rev. phil.*, 1891, 32, 614-621.
- (11) Rouma, G. *Le langage graphique de l'enfant.* Brussels, Misch and Thron, 1913. Pp. 283.

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- (12) Rouma, G. Un cas de mythomanie. *Arch. de psychol.*, 1908, 7, 259-282.
- (13) Sully, James. *Studies of childhood*. New York, Appleton, 1908. Pp. 335.



CALCULATION OF NORMAL WEIGHT

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The normal or "ideal" weight for a given individual is a highly desirable measure. It gives to the physician an index of the state of nutrition and tissue balance (and therefore the health) of his patient. It would be very desirable to obtain this information accurately in a given individual instead of guessing it approximately.

The present method of gauging the normal weight of a given individual is by the use of Height-Age-Weight tables. These tables have many serious deficiencies.

1) The Height-Age-Weight tables are derived as statistical means from measurements taken of large groups of average (not "healthy" or "ideal") individuals and therefore set up a hypothetical so-called "average individual" to whom all individual types of persons must conform. Actually, only about 60 per cent of the population "fit" such tables to a reasonable degree.

2) The figures listed in such tables are, at best, meant to be only an approximation, not an absolute figure of fact. They are meant to serve as a standard of reference rather than as true figures to be used for a particular individual.

3) The tables take into account only a single linear dimension, height, while man is a three-dimensional object having also width and thickness.

4) Such omission fails to recognize the obvious fact that individuals (of the same age and height) differ markedly as to bodily habitus (endo-, meso-, and ectomorphs). Weight is determined by the body as a whole rather than by any single one of its dimensions.

5) Growth in width and thickness does not stop when growth in height is completed. It is this growth in circumference that characterizes maturity.

6) The present tables utilize age as a measure of the continued growth in circumference after height is stabilized. However, different types of individuals (slender, stocky) grow in circumference at different rates. Age per se does not differentiate this factor and is at best again only an approximation of circumferential growth during maturity. It would be more exact to measure such increases in width and thickness directly.

It would, therefore, be desirable to calculate the "normal" or best weight for a given individual upon some system which

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utilizes direct measurements of the body. Such a system of calculation must take into consideration all the factors mentioned above and include a consideration of individuality in body build. It would be more logical than the present one based on average height, age and weight.

Method

The human body can be regarded as an irregular cylinder. This was later confirmed by the fact that body circumferences give a slightly better correlation with actual weight than do measurements of width and thickness. Further, the form of the body, at various levels, is ellipsoidal in cross-section.

Since:
$$\frac{(\text{Mean Circumference})^2}{\pi \cdot k} = \text{Average cross-sectional area of body}$$

(k = Correction for irregularity of body)

The volume of the body can be expressed as:

$$\frac{(\text{Mean Circumference})^2}{\pi \cdot k} \times \text{Height} = \text{Volume of Body.}$$

$\text{Volume of Body} \times \text{Specific Gravity} = \text{Weight of Body.}$

$$\frac{(\text{Mean Circumference})^2}{K} \times \text{Height} \times \text{Specific Gravity} = \text{Weight of Body.}$$

Derivation of Mean Circumference. The average or mean circumference of a given individual is best represented by the circumference of the chest taken at Xiphoid (clinically, the lowest tip of the sternum) and at quiet (not forced) expiration. This at first was determined empirically by averaging all the circumferences taken at the various levels of the body after weighting them according to how much each area affects body weight.

It was also found that this particular level measures the mean circumference of the body in both the male and female so that the same formula can be constructed to apply to both sexes. (The index of gynandromorphy, maleness and femaleness, is measured by comparing shoulder and hip widths. The male has wide shoulders and narrow hips; the female narrow shoulders and wider hips. The circumference at Xiphoid represents the mean circumference in both sexes.)

There are other and more subjective reasons for finally deciding to use the Xiphoid level for the measurement of the

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mean circumference of the body. This level permits a fairly good skeletal measurement and it is very desirable in anthropometry to use, whenever possible, skeletal points and measurements rather than soft-tissue measurements. The former are by far the more constant and reliable.

It must be remembered that in calculating weight we are, in reality, trying to estimate the amount of soft tissue which should ideally be draped over a particular skeletal framework. The measurement should therefore be as little influenced by fat pads and muscle as possible. The Xiphoid plane offers such a level. In even obese individuals, the fat forms layers or pads above this area (fat pads of shoulders and breasts) or below it (the "rubber tire" over the abdomen), but usually leaves this area relatively free.

The modesty factor in measuring the adult female is also eliminated by taking the measurement at Xiphoid instead of over the breasts or the hips.

The measurement is taken at quiet expiration for two reasons: First, the specific gravity of man is most constant and closest to unity at quiet expiration. Second, it is much more accurate to read an end-point than to estimate a mean. This is especially important here since errors in the measurement of chest circumference would be magnified by squaring in the formula.

Specific Gravity

Weight is markedly influenced by tissue composition. The major soft tissues that influence weight are: (a) muscle, (b) fat, and (c) loose subcutaneous connective tissue. Water is also an important constituent of the body tissues and cells. The relative proportions of these tissues vary with age and bodily habitus and determine the specific gravity.

The specific gravity of man changes somewhat with age and with bodily habitus. When taken at quiet expiration, the specific gravity is closest to being a true measure of his tissue composition or the quality of the soft tissue draped upon his skeletal framework.

Specific gravity is very close to 1.0 from 5 to 18 years of age. It is less than unity in the infant and young child since they have relatively more fat (low specific gravity) than muscle (high specific gravity). It rises gradually to 1.04 from 18 to 25 years and to 1.08 from 25 to 40 years because of the increase in muscle and bone mass over fat and loose connective tissue. After 40 it gradually declines again towards unity, as fat and connective tissue again increase while muscle and bone mass decrease. It is slightly higher in the muscular and slender type

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of individual than in the stocky type of individual and lower in the female than in the male.

For all practical purposes it is not necessary to consider these slight variations in specific gravity except in cases of gross abnormalities in tissue composition (obesity, leanness, dehydration, nutritional and endocrine deficiencies, etc.). In these cases, a marked discrepancy will be found between observed and calculated weight. It then becomes useful to measure the volume of the body (as given before) and to calculate the specific gravity.

$$\frac{\text{Observed Weight}}{\text{Measured Volume}} = \text{Calculated Specific Gravity}$$

The calculated specific gravity is a useful tool in the analysis of tissue imbalance. The significance of specific gravity in the interpretation of tissue balance, nutrition and metabolism has been pointed out by Behnke, Feen and Welham (1) and Welham and Behnke (2).

Findings

The empirical formula was tested in a total of more than 1,000 healthy males and females ranging in age from birth to about 50 years. The predictive value of the formula was found to be excellent in the majority of cases. The coefficient of correlation between the calculated weight and the observed weight was 0.82. The final formula obtained was:

$$\frac{(\text{Chest Circumference})^2}{K} \times \text{Height} \times \text{Specific Gravity} = \text{Calculated Weight.}$$

$$(K = 4.0) \\ (\text{Sp. Gr.} = 1.0)$$

$$\frac{(\text{Chest Circumference})^2}{4.0} \times \text{Height} = \text{Calculated Weight.}$$

If the measurements are taken in centimeters, the result is in kilograms. If the measurements are made in inches, divide the whole by 27.69 (1 lb. H_2O at $98^{\circ} F.$ = 27.69 cubic inches).

Technique of Measurement

Height. Stand subject (without shoes) against wall with

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heels, buttocks and shoulders touching the wall. Tilt the head into the Frankfort Plane (eye-ear plane parallel to floor). Use a right angle to measure to top of head. Use same technique on infants in prone position.

Chest Circumference. Stand behind subject and encircle chest with tape at level of lower end of sternum (Xiphoid). Determine this point by palpation. Tape should be parallel to floor. Tell subject to inhale deeply and then exhale naturally (not forced). Pull tape fairly tight. (Pull tape very tightly in stout individuals to compensate for some subcutaneous fat and hold more loosely in slender persons whose bony structures are very evident.)

Take the lowest end-point reading. Repeat until two measurements coincide exactly. Remember that even a small error in this measurement will be squared in the formula and will give very fallacious results.

If more than three trials are necessary, your technique is faulty. Chest circumference at quiet expiration is not the same as uninflated chest measurement. In boys particularly, the masculine ego will cause them to instinctively inflate their chests and to give a false reading. The deep inhalation followed by expiration should eliminate this variable and gives a fairly reliable end-point.

The utility value of this method of calculating weight is high because of the simplicity of the measurements. The calipers used in some methods is replaced by the tape-measure. Any physician, nurse or teacher can quickly learn the method. The nomogram eliminates the necessity for calculations and is as easy to use as the average height-age-weight table.

Dysplasia. The trunk and head contribute 60 per cent and the limbs 40 per cent of the total weight. In dysplastic individuals where the extremities do not fit the trunk, the calculated weight must be adjusted. It should be remembered that chest circumference represents the mean circumference in the normally proportioned individual. Emphysematous chests will also invalidate the method. In fact, this is a good way to discover them.

A great deal of the accuracy of any method depends on the intelligence with which it is applied.

Calculation. Calculation is simplified by the use of the nomograms (Figures 1 and 2). Connect the proper points on the lines marked "height" and "chest circumference" with a straight edge and read the result on the middle line marked "Calculated Weight (or Volume)."

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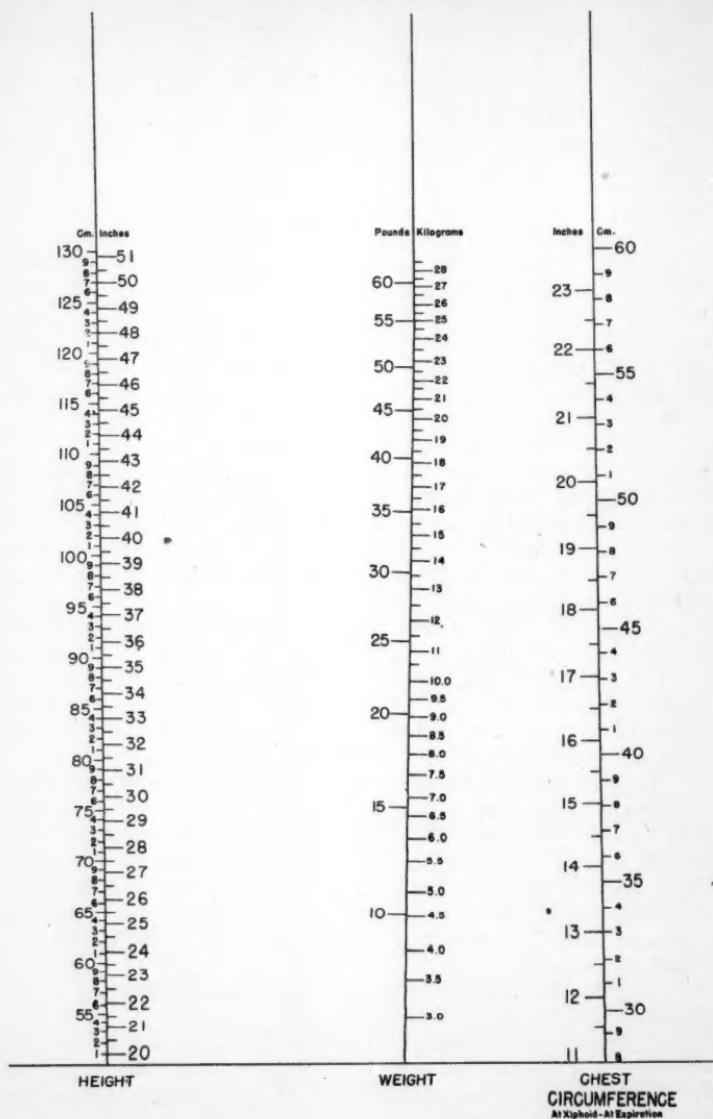


Figure 1. Nomogram for calculating "normal" weight of infants and children.

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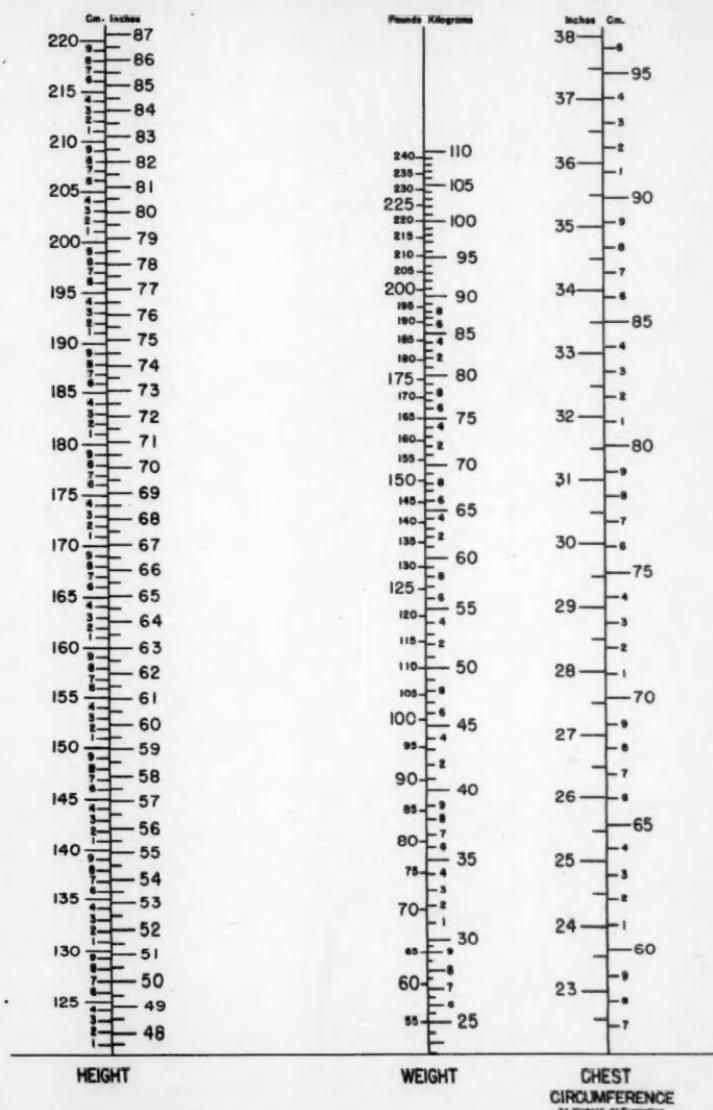


Figure 2. Nomogram for calculating "normal" weight of older children and adults.

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REFERENCES

- (1) Behnke, A. R. Jr., Feen, B. G., and Welham, W. C. The specific gravity of healthy men. *J. Am. Med. Assoc.*, 1942, 118, 495-498.
- (2) Welham, W. C., and Behnke, A. R., Jr. The specific gravity of healthy men. *J. Am. Med. Assoc.*, 1942, 118, 498-501.

THE SOCIAL INTERESTS OF YOUNG ADOLESCENTS

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The fact that girls mature physiologically from one to two years ahead of boys is well-established. There appears to be corresponding maturation in social interests of a heterosexual character. Although this fact seems obvious to persons who have close contact with young adolescents, it appears to have received scant attention from research workers in child psychology.

In the course of examining pupils for admission to a junior high school in New York City, the writer obtained activity preference records for boys and girls between the ages of 10 and 14 which indicated the nature and extent of the differences between them in social interests. These pupils came from homes above average in socio-economic status and they rated about 123 I.Q. on the average.

Technique for Determining Activity Preferences

As a part of the school entrance examining procedures each pupil was given the Hildreth Personality and Interest Inventory: High School Form,¹ containing a list of activities from which the pupil was instructed to select and record on a separate sheet of paper the three or more items that represented his chief interests in spare time activities, and the three or more in which he was least interested. There were 45 items in the list, such as: Taking care of animals, going to movies, collecting things, entertaining company, taking pictures, having dates, working with electricity, building things, running a club, dancing, gardening, outdoor sports.

Pupils were instructed to be sure to include their chief interests in the recorded lists whether or not these were included in the printed list. Pupils were given the test individually or in small groups.

Results

Records were available for 87 boys and 105 girls in the age levels 10 to 14. Activity preferences were divided into two

¹G. H. Hildreth, *Personality and interest inventory. High School form*, New York, Bureau of Publications, Teachers College, Columbia University, 1936.

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categories: those which signified directly or indirectly social interests of a heterosexual nature, and those which did not. In the first category were included: Having "dates," social dancing, going to parties; in the second category, all other activities. The frequency of preferences for these two categories, according to the five age groups, is shown in Table 1. The first category is designated as "Social," and the second category as "other."

TABLE 1

ACTIVITY PREFERENCES OF YOUNG ADOLESCENTS

Age	Boys			Girls						
	Social	Other	Total	Social	Other	Total				
	No.	%	No.	%		No.	%	No.	%	
10	0	0	3	100	3	0	0	3	100	3
11	1	4	25	96	26	6	31.6	13	68.4	19
12	7	27	19	73	26	11	39.3	17	60.7	28
13	3	10.7	25	89.3	28	23	55	19	45	42
14	1	25	3	75	4	8	61.5	5	38.5	13

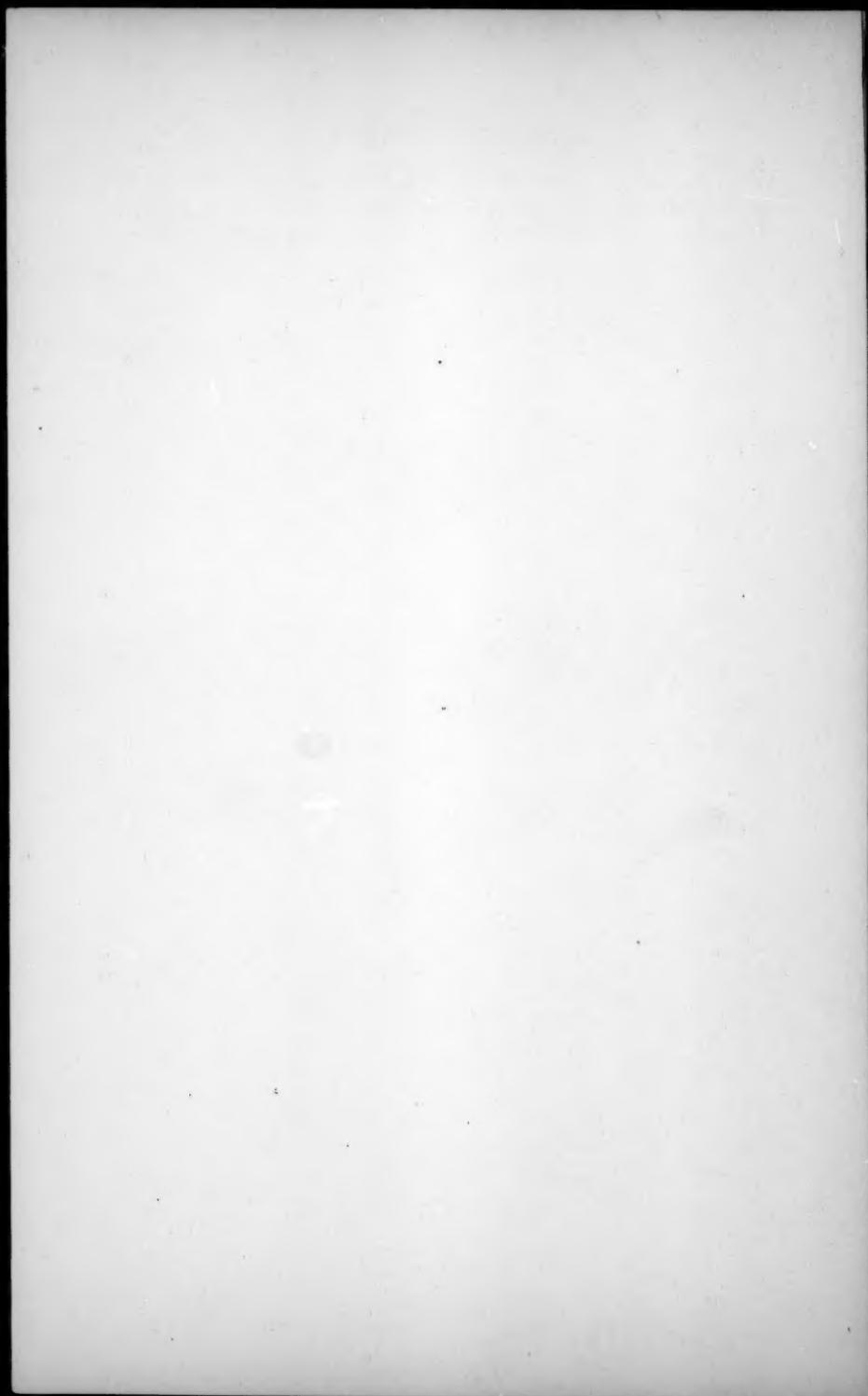
These results tend to bear out the general observation that girls mature earlier than boys in social interests which appear to be related to their earlier physiological sex maturation. In spite of the small numbers of cases, the trends are unmistakable. However, the number of cases is too small in the separate age categories to establish statistically reliable differences. Some such study as this should be carried on with larger numbers of representative children in each age level.

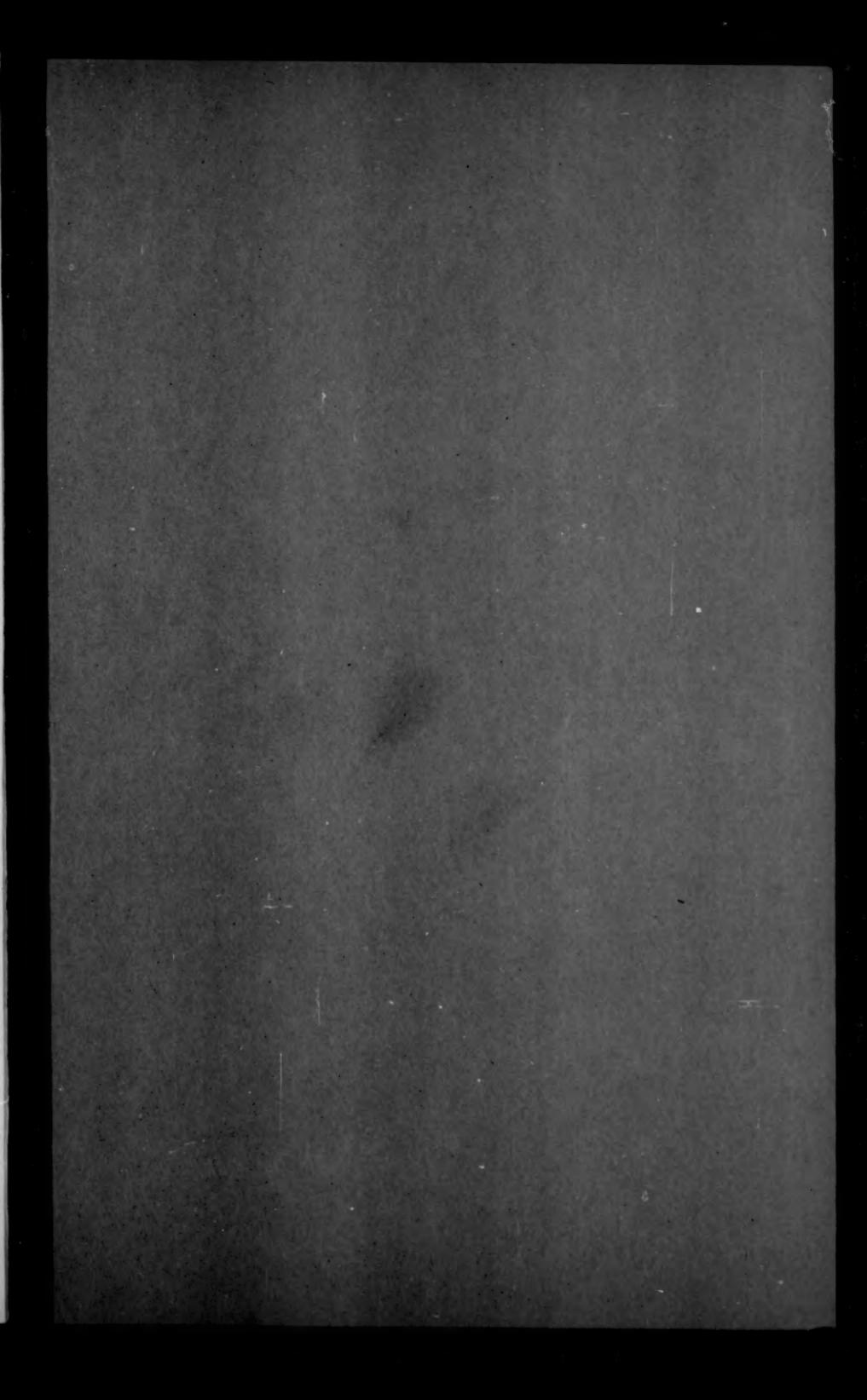
The greater incidence of social interests shown by boys in the 12 year age level may be due to the fact that boys of this age are more easily corralled for dancing lessons than the 13-year-olds who insist on having more spare time for sports. It was interesting to note that in lieu of social activities involving girls, boys in all the five age levels tended to list as preferred activities: working with tools, doing science experiments, working with electricity, observing and participating in sports, taking pictures, playing musical instruments, going to movies, collecting things, reading.

No doubt this difference in social interests accounts for

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social noncompatability of like-age boys and girls in junior high school, and explains the tendency of girls to "go with" older boys, and of boys to prefer association with their own sex.





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